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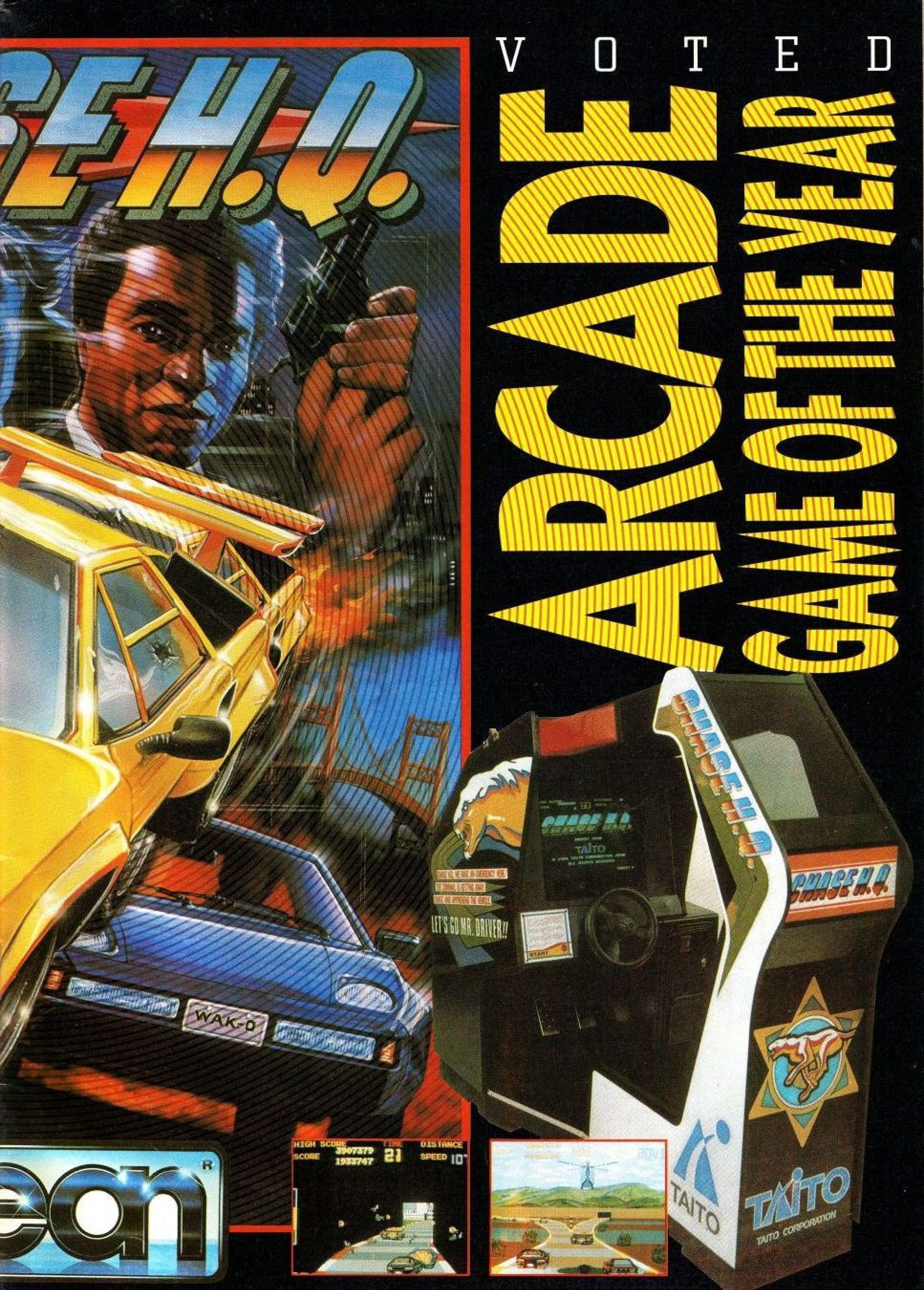


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REGULARS





FEATURES

LETTERS



Help!

I'm writing to ask if you, or one of your readers, can help me. Some time ago, well, a long time ago, to be precise November 1985, Amsoft ran a software competition. The winner of this competition was a Simon Hargreaves whose winning entry was called "Micro Draft". For those who haven't got long memories (or the old ACU back issues!) "Micro Draft" is a screen designer in Mode 2 for drawing circuit diagrams. Just recently I have had the need to draw a number of diagrams and I am up to my knees in bits of paper! This seems to be a bit of a waste of paper, especially as I have a perfectly good computer, and discs take up so little space. If anyone can help me find the program or its author I would be very relieved; it may even help to preserve a few trees!

P.S. 464's with Tasword and a DMP2000 are OK.

A. D. Fussey, L1,6A,2PW, RAF Sealand, Deeside, Clwyd CH5 2LS.

Free offer

Recently in the March, April and May issues of ACU I offered to send people my "10-Liners" (I got a very good response).

If anyone is interested, I am now offering 100 Mini-Programs. All you have to do is send me the following:

1) A disc (blank both sides)
2) 50p (copy charge)
3) A stamped addressed envelope

The 100 programs consist of games, graphic demos, music etc. from various magazines (many are "10-Liners").

David Hall, 12 Stotland Road, Stretford, Manchester M32 9HA.

What discs?

Last Christmas my brother and I got an Amstrad 6128 and have only bought a few games since, because where we've been they don't do a lot of disc games. I've only been collecting the Amstrad User Mag for a few months. I would be very grateful if you could send me a sheet that tells me what disc games I can get for the Amstrad 6128 and where.

Robert Graham, Pitsea, Basildon.

ACU: Most full-price games for the CPC come in both disc and tape format, so if you see a game you like, your local shop should be able to order a disc version for you; or you can contact the suppliers directly. We intend, in future, to make it clear whether a game is released on disc or tape or both, with prices.

Frustrated

December '89's issue of ACU is the first one I've bought, being new to this computing game. Please tell me if you think it's me, my computer (464) or a printing error in your mag, but try as I might I cannot get lines 20, 40, 50, 90 or 100 of A. G. Hall's 10-liner into my computer. Line 20 fills up the character limit just as you get to the last 4 characters ([OB]) and the same with the others. Then, when you run the prog leaving these out, it comes up syntax error in 10. I was tearing out huge clods of hair after spending 1.5 hours one-finger typing this lot in! Then I moved on to the 'Maths Tutor' by M. Pinder. Plonking this in only took me a mere 15 minutes but imagine how I felt on running it to see syntax error in 10. I tried again, looked again and then beat my fists on the kitchen floor, wall, fridge, and cat as it passed by, but it still came up syntax

error in 10!
Help! Is it me or what?

M. J. Burke, Colchester, Essex.

ACU: The good news is that you probably have not made any mistakes. The bad news is that some programs (and we do try to screen them out) will run on the 6128 but not the 464. This is due mainly to the extended instruction set of the 6128. To be on the safe side you could check the commands using your reference guide to ensure that all commands listed are valid for your machine.

Book plea

In the "Read All About It" review in your November 89 magazine, you have a write-up about "Your First Amstrad Programme" by Rodney Zaks (£2.08). We have tried all the large bookshops in Birmingham and are unable to get a copy. Please could you let us know where we can get one for our daughter.

M. Spencer, Yardley Wood, Birmingham.

ACU: Owing to an oversight by someone old enough to know better there was no details box given at the end of our books round up. So, to put the matter straight, here is the information: The Computer Bookshop, 021 706 1250.

Of course

I am twelve years of age and have recently bought an Amstrad CPC 6128.

I am writing to ask you whether there are any Amstrad Computer courses which would take place during the 1990 summer holidays. I have been using computers at school but they are BBCs and we don't do much with computer language.

Tom McKenzie, Gosforth, Newcastle-upon-Tyne.

ACU: As far as I am aware there are no courses which deal with the use of the CPC, but a good way to learn the BASIC language is to type in a few 10-liners and mess around with them. You can find out what each command does by looking it up in your user guide.

Pac problem

With regard to the 10-Liner game which you published in your December edition called "PACMAN", I am writing to you (following my telephone call) to amend the program which was inputted into my Amstrad CPC 6128. When I corrected the mistakes, I found to my horror that the "Ghosts" all moved except the man.

I am wondering and am open to advice about how to get the program working properly. I am, however, not willing to give out my telephone number as I am ex-directory, so if the person who wrote the program can help, would he/she write to the address given below. Whenever I press the "/" or the "?" button the program automatically collapses and the line → appears in the "EDIT" mode. I look forward to a response.

Chris Jones, 98 Sketty Park Drive, Sketty Park Estate, Swansea SA2 8NG.

Landscaping

I am writing to confirm that I am unable to get Fractal Program 2 (m/code loader for file: FRA-A.BIN) to run properly.

My listing has been checked independently both as a program and by the proofreader numbers. However, on running the BAS listing to obtain FRA-A.BIN, the computer throws out "ERROR in Final C/SUM". Rather disheartening after my long, slow typing efforts, and I do not know, as a non-expert, where to look. As I believe you do not reply to individual letters I shall look forward to the next issue of ACU.

Keith ones.

ACU: I know the program works because I tested it personally, and as the listing is produced from the working program with proof codes added, your problem mystifies me. If any other readers are having this problem with the fractals listing, however, they should let us know, because if it is not an isolated case, we will endeavour to solve the problem. Alternatively, some kind soul may like to donate a working copy of the listing to Keith to ensure it is the listing and not his machine which is at fault.

Hairy who?

I am an eleven-year-old boy and I have just received my first issue of ACU (December issue). I enjoyed it very much and I thought the best thing was Gameplan. The only thing I didn't understand was the Hairy Hacker. What is it all about? Please tell me. Another thing is that I can't get these Basic programs that you type yourself to work. What is the secret?

Adam Uytman, Pitlochry, Perthshire, Scotland.

ACU: The Hairy Hacker is there to help you get the most from your games. He prints small programs (supplied by readers) and passwords which allow you to cheat while playing your games. Common cheats make your characters indestructible, and give them an infinite number of lives. To use these pokes and listings, follow the directions supplied with each cheat.

Fanzine

I am starting a fanzine called *Megabyte* for all CPC users and would be very grateful if you could print my address so that anyone wishing to purchase a copy can write to me. This fanzine will be mainly for games players, as it will consist of mostly games reviews, but each month will also include: a beginners section, a hardware review, two serious software reviews, a letters page, a page dedicated to the latest news in the world of the CPC, a company profile, an arcade section, a pokes section, a questionnaire (in the first issue) and more. Altogether there will be twenty-eight pages (seven sheets of A3) and it will cost 50p plus 20p postage and packing. Thanks.

P.S. If I send you a copy of the first issue, will you review it? Megabyte has been inspired by your brilliant magazine, of which I have every copy since February 1988.

Chris Gibson, 15 St Clements Road, Chorlton-cum-Hardy, Manchester M21 1HT.

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- We supply our drive with the RODOS operating system, giving not only this vast disk capacity but also over 50 new bar commands plus a printer buffer, etc.
- Easily fitted - full instructions.

464 owners must already have at least one Amstrad drive.

Only £119.99 for Drive and RODOS including PSU/Cables

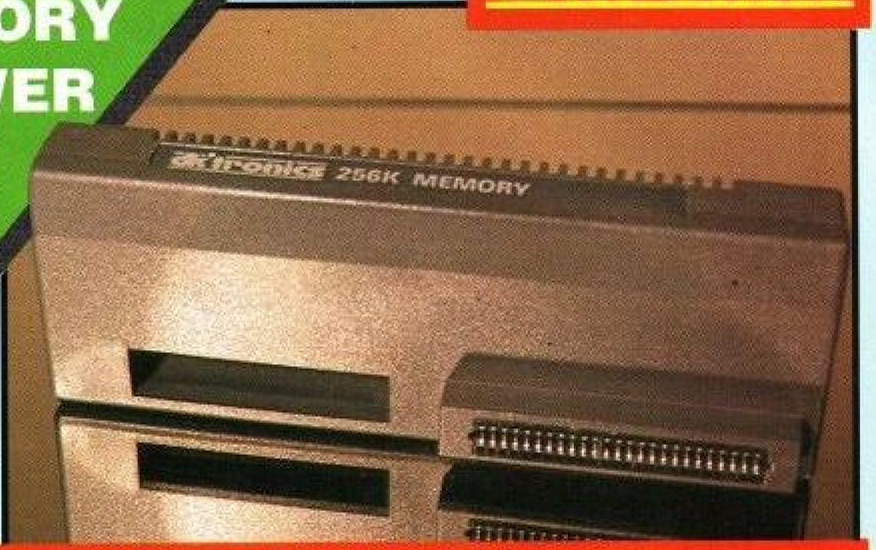
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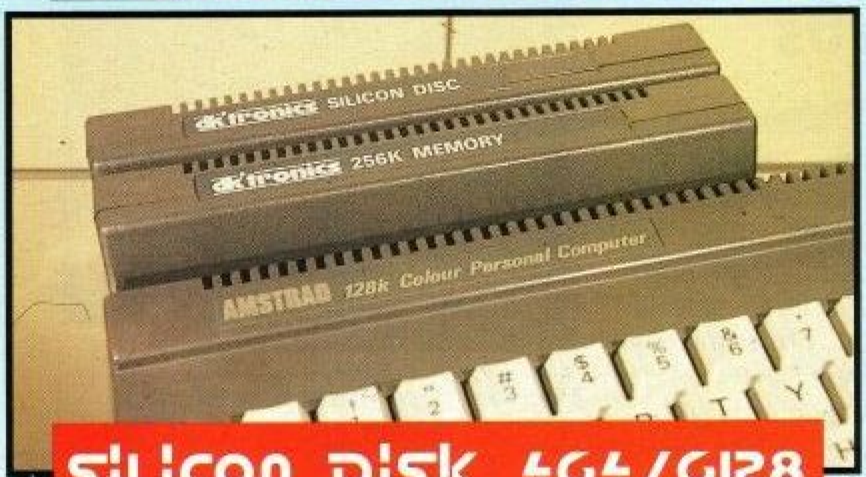


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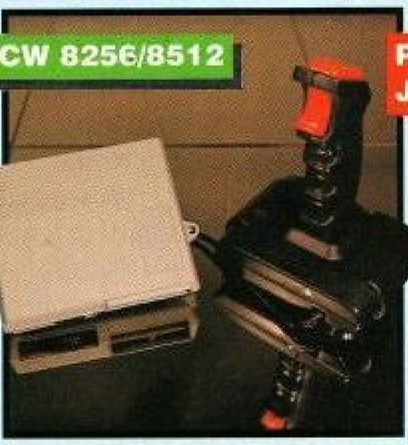


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- This is the fastest storage system available for the Amstrad CPC computers and is compatible with CPM 2.2, CPM+ and all DK'Tronics peripherals.
- The 2516K Silicon Disk is designed to be used in conjunction with at least one normal Disk Drive attached to the system.
- When the 2516K Silicon Disk is fitted only 2K is used for the Silicon Disk directory, leaving 254K for storage - that's 70K more than a normal Disk Drive.
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- Software is on ROM (nothing to load) and can be used in two modes - Basic under AMDOS with normal LOAD, SAVE CAT MERGE commands etc. and within CPM 2.2 CPM+ where commercial programs are designed to run on multi-drive systems.

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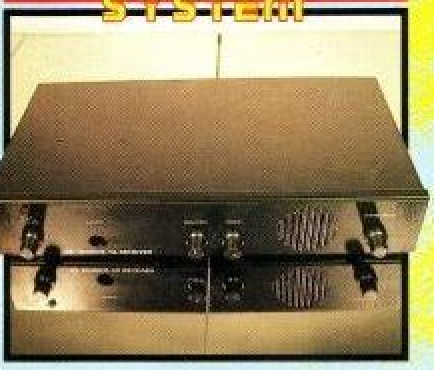


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Chris Payne – a happy man.

Mini Office – maxi sales

Mini Office – the record breaking series of small business packages from Database Software – has achieved another milestone in software history by notching up more than 500,000 sales and has made marketing manager, Chris Payne, a very happy man indeed.

Launched in October 1984, the title in its various forms has scooped numerous industry awards, and became the first business package to enter the bestselling software charts.

"We knew we had something special when we developed the first Mini Office," claims Chris, "but even the most enthusiastic among us would never have predicted sales like this."

CPC user Michael Graham of Cumbria will become the proud owner of a state of the art Sony video recorder to mark his purchase of the half millionth copy of Mini Office.

Competition winners

Oh you lucky people! Remote controlled Porsche racing cars are on their way to James Ingram of Port Erin, Isle of Man and Simon Clarke of Ross-on-Wye for their winning entries in the Hard Drivin' competition.

Twenty super Grand Prix posters will also be despatched to the runners-up. Keep on piling in the great entries and we'll keep on piling on the prizes.

CD news

The latest development from Codemasters brings a fast loading CD ROM system direct to your CPC.

The new system includes the compact disc, the interface cable to connect your CD player to your computer, and a disc or cassette containing the necessary software to allow the ultra high speed loading.

The Codemasters system gives high performance through the laser optical signal combined with digital playback and unique ultra-fine loading.

The disc, containing 30 games, will be available in a special boxed set along with all the necessary equipment for £19.95.

Programming for the 90s

Software giant MicroProse looks set to launch into the 90's with a new feather in its cap – a UK based in-house programming team.

Tim Walter, Adrian Scotney and Malcolm Hellon will form the core of the group, with more programmers expected later in the year.

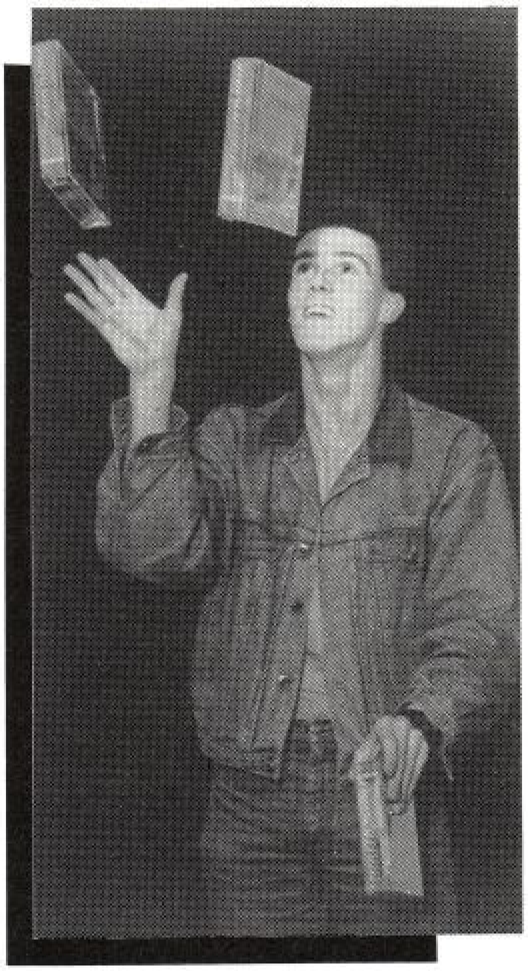
MicroProse publishing director, Paul Hibbard, remarked: "The new appointments mean that we'll be able to develop games to our specific requirements and to continue the exacting standards for which MicroProse is well renowned."

Any old fruits?

The Torquay based Parkview Society catering for adults with mental health problems has put out a plea for alternative fruit machine games.

The group provides CPC 464's for residents at its three hostels and the most popular game to date is the evergreen fruit machine. Any old, unused or home-produced versions would be gratefully accepted by the organisation and compensation can be arranged.

Anybody with ideas or donations should contact:
The Parkview Society
15 Castle Road
Torquay
TQ1 3BR
Tel: 0803 24378



Mike Day – Domark's in-house juggler.

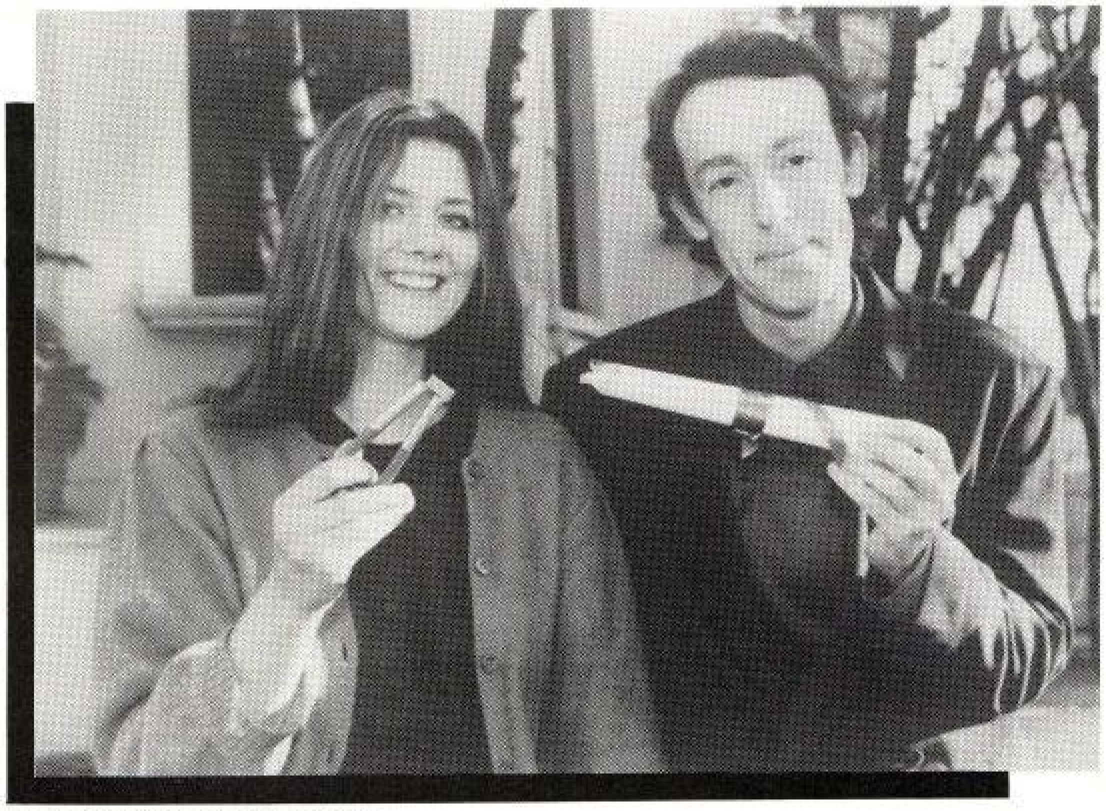
Domark's gamester

The latest release from Domark seems to be a gamester rather than a game.

Mike Day, who joined Binary Design in 1987, is the man behind the 8-bit Amstrad version of Hard Drivin'. But when he's not programming, Mike certainly likes to make the most of his spare time.

In between juggling, he is about to jump into the Guinness Book of Records 1990 with the world record for uni-cycling from Lands End to John O'Groats in 14 days, 12 hours and 14 minutes.

Well, if it helps with the creation of classy software – why not?



Anita Sinclair and Ken Gordon.

Bold venture

Adventure game pundits can look forward to some real masterpieces following the signing of a long term licensing agreement between Virgin Mastertronic and adventure supremos Magnetic Scrolls.

Scrolls, founded in 1984 by Anita Sinclair and Ken Gordon, is renowned for its consistently high quality graphics and for pushing the computer to its limits.

Nick Alexander, Virgin Mastertronic's managing director, said of the deal: "Over the last 18 months we have demonstrated our commitment to top quality arcade games. We now feel ready to do the same with adventure games and they don't come any better than those from Magnetic Scrolls."

Emlyn's a real brick

When is a bat not a bat? When it is a half-bat? Well, no, that's not strictly true, because a half bat, as all you knowledgeable trivia masters out there will know, is a brick.

This was the dramatic poser that won Raymond Lee of Ipswich first prize in the Audiogenic trivia competition (ACU June 1989) and a trip to London to meet Emlyn Hughes at the launch of a new quiz game hosted by the old soccer hound himself.

After signing himself silly at the Virgin Games Store in Oxford Street, Crazy Horse jumped aboard a sightseeing bus bound for Cricklewood, laid on by Audiogenic to celebrate the game's launch.

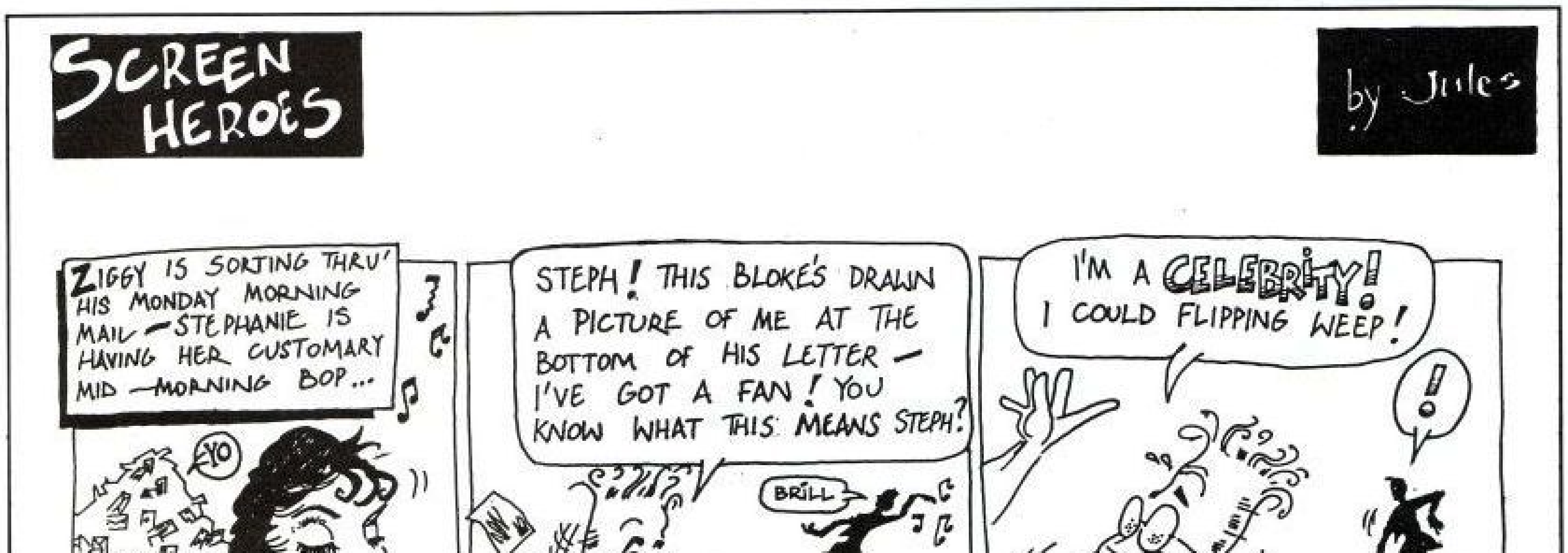
Based on the popular pub style trivia machines, the Emlyn Hughes Arcade Quiz also boasts the strategy of traditional board games.

Hopping from block to block, the player will encounter Kickers, Blockers, Zappers and Blasters, not necessarily in that order, as he picks up fruit and money en route to the Win Bar.

It should be great fun when it comes out in January – the mock game set up by Audiogenic and played by the alcohol infused press certainly was.

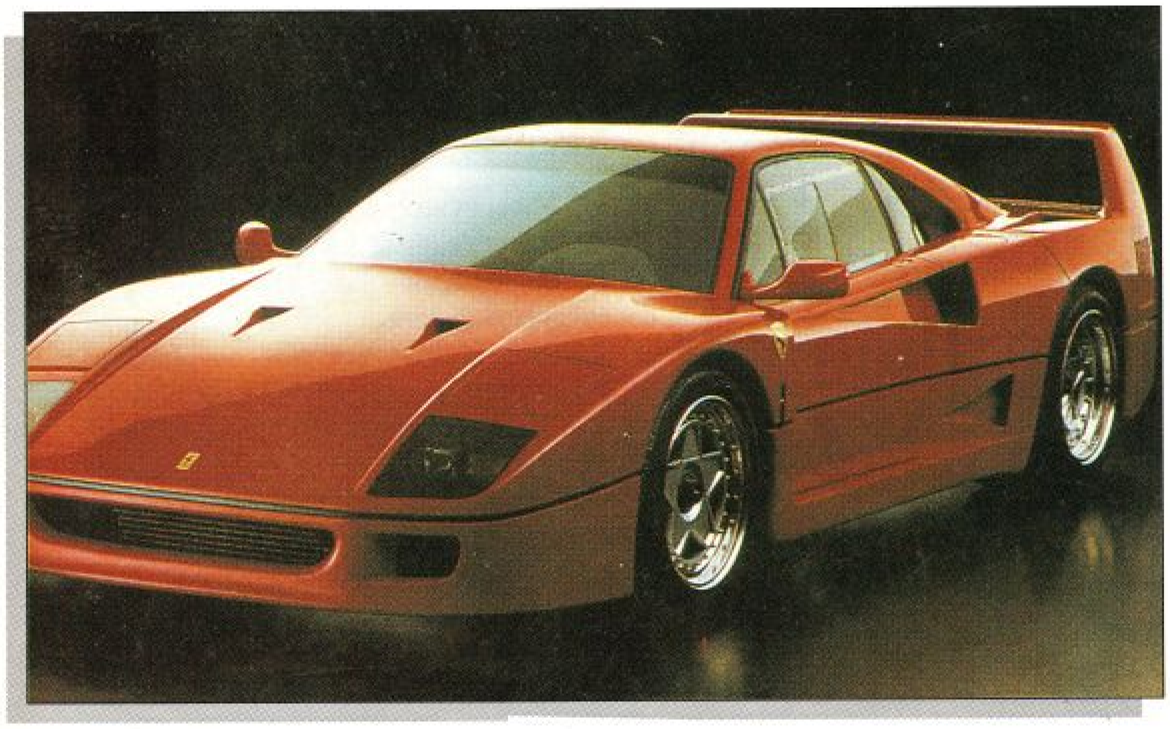
As for Raymond, a Crazy Horse autographed football and a game copy was the reward for his trivial teaser. So, when you get your copy, remember what a half-bat is, it could lead to a longer innings!

The Emlyn Hughes Arcade Quiz will cost CPC users £9.95 on cassette and £14.95 on disc.





I'm a Hard Driver



If you thought the Porsche competition in November's ACU was pretty hot stuff, try this. The release of Hard Drivin' from Domark has given us the idea for an even bigger bonanza. Domark has generously stumped up three remote control Ferrari's which we will give to the first three correct answers to the questions below.

1. When did Enzo Ferrari die?

2. Which two drivers drove for Ferrari in the '89 Grand Prix season?

Air sezena
nigel mansell.

3. Which is the fastest production Ferrari?

Ferrari Testarossa

Entries to:
Testarossa Test, ACU,
Avralite Publications,
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COMBAT ZONE

John Cook dons his coin-op fatigues and looks forward to the Spring season of releases.



Now that all the excitement of the Autumn shows is past, we have got all the Spring shows to look forward to! There are two main coin-op shows at the beginning of the year: one in London, called ATEI, and another in Blackpool – where else – called, the Blackpool Amusements Exhibition. What else would it be called?

But with these still weeks away, does that mean there is any lack of new products, with the big boys waiting for the next season's trade shows? To some extent, yes. But there are still plenty of new releases out there to satisfy all but the most demanding players in the meantime.

The favourite with the punters at the moment? That seems to be *Midnight Resistance* from Data East. The people that brought you *Robocop* and *Secret Agent* have now produced a game which, while being quite different in its graphic style, has all the playability of the others – and more.

In this jumpy-jumpy/combat game, the scam is the usual – you versus millions of underlings – but the control system is, at least, slightly novel. It uses a normal eight-way joystick with a swivel knob on the top. You move around in the normal way, by moving the stick, but you alter your direction of fire by rotating the knob.

Having mown down hordes of enemy fighters, you pick up key-like things that float over the stiffs, because these can be used to get big extra weapons in the intermediate screens between levels. Lots of people seem to like the thing; maybe you will too?

More my cup of tea is *X-Multiply* from IREM. Call it a simple *Nemesis* clone if you will, but this horizontal scroller has got me well hooked at the moment.

As usual you start off with a weedy spaceship, but one of the first power-ups you collect gives you these tenticles, that move about your ship synchronised with your own movements, and when they move they lob scathing fire about.

With a theme based on the goings on inside a body (yuk!), this game has the playability of a classic. Strongly recommended if you can get near a machine.

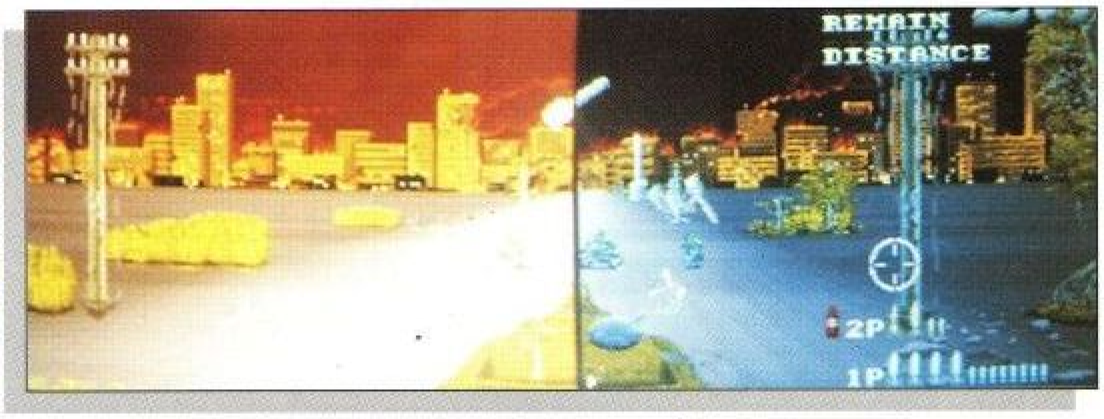
Now there is nothing quite like a good racing game, is there? And over the years Namco have usually managed to deliver the goodies in that


Midnight Resistance.


Go forth and X-Multiply.



Four Trax better than two.



Cybertank – it can blow a man's arm off at the count of three.

particular department. Remember *Final Lap?* I managed to ferret out a six-player sit-down set up the other day. Trouble is, though, that it was in Amsterdam! I just cannot see me and the mates nipping over there every evening, somehow, for a quick session!

It was undoubtedly the finest multi-player racing game, until Sega came up with multi-player *Super Monaco Grand Prix*. Have Namco managed to fight back with its latest racing extravaganza, *Four Trax?*

Well, the jury is still out on this one, I am afraid. These double sit-on units, which can be linked together to make an eight-player game, try to simulate the rough and tumble of racing quad bikes – mini tractor things to you. Take it from me, riding these things in real life is great, but despite some OK programming, the thrill of it does not seem to convey itself to me when I play this game.

You control the bike on-screen with a pair of handlebars, with speed dictated by the throttle control on the right grip and a hi/low gear lever. Make those jumps, drift round those corners . . . but there was still something missing. Maybe if someone had thrown a bucket of mud over me it would have captured that authentic atmosphere one needs. Who knows?

The trade has been going for these units in a big way, however, so you can expect to see them cropping up in your local arcades soon.

Want to really turn off the brain and get right down to primitive action/reaction? You could not do much better than to have a go at *Task Force Harrier*, from the makers of the excellent *Omega Fighter*. Call me a Philistine, but give me a game with an autofire, and I will be able to show you a pocket empty of 10p pieces!

Small sprites are the order of the day in this vertical scroller, but you do have to keep all your wits about you, because bullets fly everywhere – with alarming speed and frequency. There are some fab power-ups you can collect as well. Not a classic game, not a landmark in the history of the video industry, but a damn good thrash! Try it and see.

Now here is an odd thing. Well over a year ago I saw a game called *Cyber Tank* being exhibited at one of the shows. Two screens side by side, interesting graphic style; it let two people play the game at once, one being the driver of the tank, the other the gunner. It did not do a thing. However, much to my surprise, it has turned up again. Is anyone going to play it this time? Is it going to be any cheaper than before? I do not know, but I will tell you one thing for nothing: it looks good on the telly.

As does *Toki*. Produced by the Tao Corporation, it has a very attractive graphic style and a humour all of its own.

You control Toki, who looks a bit like a chimp. He was not always like that, however, as he was a hunky guy at the beginning of the game, a guy trying to free his girlfriend from the clutches of an evil something or other. Unfortunately, some heavy magic has turned back the evolutionary clock, which hinders the rescue somewhat.

Looking like a 'lorra laffs', as our Cilla would say, it is one of the most distinctive looking games to appear this year, so let us hope that it does well.

Finally, you would have noticed that there were a lot of puzzle/arcade games brought out at the end of last year. Why? Well, after the mega success of *Tetris*, everybody else was trying to find a Tetris of their own. The attempts, without exception, were garbage. Now however, Konami have come up with something that approaches the simplicity and addictiveness of Tetris itself. It is called *Block Hole*.

A kind of cross between *Space Invaders* and Tetris, you control a spaceship moving left–right along the bottom of the screen. You can fire vertical stream of blocks, upwards, however.

From the top of the screen, a matrix of different shapes come steadily down. What you have to do is make them into regular rectangles by firing at the appropriate blocks when they are in the right position, before they reach the bottom of the screen.

Succeed and the shape will disappear. Fail and you lose a life. Simple, effective, fun.

Black Hole is my tip for glory this month: have a go if you can find one in the arcades near you, and expect to see an "artistically insed" version on home computer before too long. Cheers!

The BrunWord Package CPC6128 £30

BrunWord 6128 is a complete word processing system consisting of three programmes, a word processor, a spelling checker and a card filing programme. It is written to run on a standard unexpanded CPC6128 (or CPC464 + disc + 64K) and is optimised for use with a single disc drive. The latest version was released in October 1988 and out performs any other word processor for the CPC6128. The reason is quite simply that the latest versions of our competitors programmes have been designed for other larger computers whereas BrunWord has been perfected for the CPC6128.

The integrated spelling checker of BrunWord 6128 and its 30,000 word dictionary load at the same time as the main programme. We invented a special system to compact the dictionary so much that each word is represented by just one and a half characters. Each group of words had to be given the correct group ending and typed in by hand, taking one 'man' six months to complete. With such a compact dictionary, we are able to store this in the 64K of banked memory, making access very convenient and exceptionally fast.

Our closest rival claimed that their spelling checker achieves 'up to 2000 words per minute'. Our tests, published at the October 88 Amstrad show, revealed that its average speed for a file of 3366 words was only 526 words per minute and much more to our surprise, that it required eight changes of the disc to complete the spelling test. Our spelling checker, BrunSpell, achieved 3883 words per minute for exactly the same test and needed no disc in the drive. Remember that all other word processors need to load the dictionary from disc during the spelling test, even the so called ROM versions.

Scrolling the screen one line at a time, is also a vital performance test, as the CPC6128 tends to be naturally slow at this. Again, our closest rival is widely regarded as very fast, but BrunWord is 40% faster. . . . . .

BrunWord has a 40 page manual which has several detailed examples, starting with step by step instructions to produce and print a simple letter. But your very first step is to load the TUTOR file into BrunWord. This takes even the complete novice straight into word processing and demonstrates the powerful editing and formatting features of BrunWord. There are also examples of printer control, showing how to create headings, to underline or to emphasise, and five deliberate spelling errors for you to correct. The tutor takes about 20 minutes to run through and after that you will feel confident to type in your own text.

Our Booklet 'BrunWord & Printer' has 5 pages devoted to the BrunWord 6128 package.

BrunWord Features

*40, 80 or 128 column display *Touch typing speed over 200 words/min *True insert or overwrite *Justify or unjustify paragraph or whole text *Justified text has balanced appearance *Instant word wrap *Block save, move, copy, insert and delete *Local editing with word delete/undelete *Adjustable margins and TABs *Column/Line/Page display with file name *True word count *Find and replace *Help menus *Memory filing system *Single character embedded printer commands (18 with 3 printer codes and 21 with 10 printer codes) *Page throw markers *Multiple copies *Odd/even page headers/footers with page numbers *Multi file printing (new page or continuous) *Print specified pages *Works with any printer *True display superscript and subscript numbers *User defined print characters *Load ASCII files from other word processors *Save ASCII files for other word processors *Files can be encrypted *Maximum file size about 9 pages of text.

BrunSpell Features

*Memory resident with word processor *Checks 4,000 words/min *30,000 word dictionary *No American spellings *Add up to 5,000 of your own words *Instant lookup *Helps to find correct spelling *Automatic correction.

DataFile Features

*Alphabetical, numerical, date sorting on any field *User defined headings *Search routine *Data merging into BrunWord *Label printing.

Info-Script £50

Take the BrunWord package, expand the simple card filing programme into a comprehensive relational database and integrate this into BrunWord. The result is Info-Script. The database uses many of the internal routines of the word processor, making a very compact combination and allowing both programmes, 6 pages of text and 1000 names and addresses to be in the memory at the same time, using an unexpanded CPC6128. The great advantage of this is the speed and convenience of being able to access both programmes and their related data without any disc delays. Add to this the progressive search routines, the unique four marker system and the arithmetical functions and you will begin to understand the excitement of our customers.

BrunWord Upgrade

Send your BrunWord 6128 disc, BrunWord manual (not the packing) and a £22 cheque. We will record Info-Script, test, and return with a new manual.

Letters

I am extremely interested in the sound of your Info-Script. However, as the cost is £50 I am somewhat hesitant in purchasing and would therefore be grateful for any further literature. I am presently using Protext on ROM with Promerge and Pro-filer, but accessing Pro-filer is incredibly slow and long winded. Your advert would indicate that access time to stored data is much superior.
Mr G (Nottingham).

Thank you for my recent copy of Info-Script. My euphoria has nearly died down now - it is superb. It is a big improvement on my Protext and Pro-filer in that it combines the two with vastly superior speed and is exactly what I need.
Mr G (Nottingham).

May I take this opportunity to express my appreciation of BrunWord. My son has been the main user. After years of torture in school with pen in hand, the use of the word processor enabled him for the first time to concentrate upon the substance of what he wanted to write, and return later to correct and organise. The net result is that a young man who formerly struggled at school and hated it, now accomplishes the written components of his course with ease and satisfaction.
Mr G (Sutton Coldfield).

I have found it (BrunWord) a very easy word processor to use, and the more I use it the more I like it. The same goes for Info-Script, the more I use it the easier and more flexible it becomes.
Mr L (Australia).

BrunWord Elite £90

'Our original aim in designing this programme was to produce a fast desk top publisher with very good quality printing and a memory resident spelling checker. A few jottings on a scrap of paper revealed that two 256K memory expansions would be needed and that even then it would be far too slow. BrunWord Elite is our solution to this dilemma and runs on an unexpanded CPC6128 (or CPC464 + disc + 64K). It starts by assuming that the printer knows best how to print and provides only a controlling hand, to help choose the best compromise. It follows that the best results are achieved with the best printers.

The text is typed (or loaded) into the editor with no regard for the final layout. It is edited and spell checked using all the normal features and speed of BrunWord 6128. When this is done, a set of layout commands are placed at the start of the text. With these commands the text can be printed anywhere and everywhere on a sheet, just so long as the facilities used are available with your printer. Boxes and lines can be drawn and different fonts can be downloaded to print in different type faces.

The idea is that the user will create several page layout patterns (or use the ones supplied) and then only need to worry about typing and editing the text. The screen will not show the actual layout, if it did it would be painfully slow and would not achieve the ultimate quality.

BrunWord Elite has all the features of BrunWord 6128, all the features of Info-Script and seven 24 pin fonts (four fonts in different sizes). It is supplied with a printer lead and an 8 bit printer status port which allows the programme to interrogate the printer. Printer OFF, No Paper, OFF Line, ON Line are the status messages that keep you informed dynamically of the current printer condition.

BrunWord Elite works with any Epson compatible printer, which means ALL modern dot matrix printers. At the bottom end, even the simplest 9 pin printer will be able to print in up to six columns. If the printer has IBM codes (as well) then simple lines and boxes can be drawn, and if the printer has reverse line feed, then text can be printed anywhere and everywhere on a page.

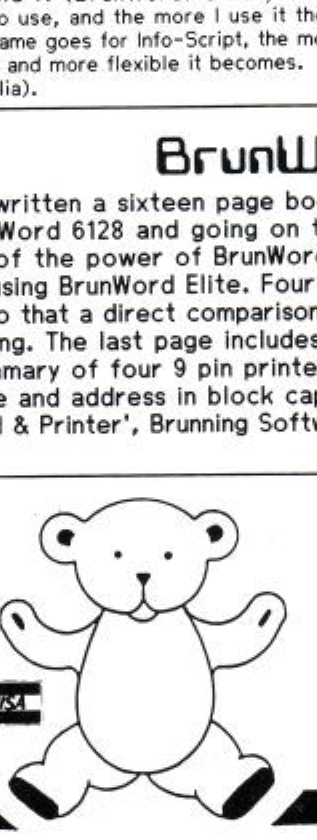
At the top end a 24 pin printer will be able to use the fonts supplied with the programme, print boxes and lines by specifying size and line thickness, and use micro justification with proportional text.

BrunWord Elite printed this advertisement, except for the layout around the teddy. The text, lines and price list were printed on an A3 sheet, then the teddy and address layout were pasted on and the sheet was photographically reduced to A4. Compare this to our December advertisement to see all the changes. Sections have been re-written, moved and then tailored to fit the columns by changing the font size and fine tuning the line spacing.

BrunWord and Printer

We have written a sixteen page booklet which explains all about our programmes, starting with BrunWord 6128 and going on to Info-Script and BrunWord Elite. The booklet is an example of the power of BrunWord Elite, being printed in A4 size directly from masters created using BrunWord Elite. Four different 24 pin printers have been used to print the booklet so that a direct comparison can be made in the quality and technical excellence of the printing. The last page includes our own assessment of seven different 24 pin printers and a summary of four 9 pin printers. The booklet is free to all CPC owners. Simply write your name and address in block capitals on a sheet of paper and send in a envelope to 'BrunWord & Printer', Brunning Software, at the address below.

Send cheque/PO/Access number/Visa number to:



Brunning Software
34 Helston Road,
Chelmsford, Essex, CM1 5JF
Telephone (0245) 252854 (24 Hours)

BrunWord 6128 with BrunSpell & DataFile. . . £30.00
BrunWord 464 with BrunSpell & DataFile. . . £25.00
BrunWord Junior 6128 with BrunSpell. £18.00
BrunWord Elite 6128, Info-Script & BrunSpell. . £90.00
Info-Script 6128 with BrunWord & BrunSpell. . £50.00
100 Letters (needs Info-Script). £15.00
BrunWord Elite and Info-Script include backup disc.
(All supplied on 3in Disc - state which computer)

All prices are inclusive for UK. Overseas orders sent insured air mail - Europe add £2.50 : Rest add £7.50

WHACK ATTACK

BY DAVID HALL

A real tension reliever is this "10-Liner" version of the Sweet Licks arcade game. Pick a skill level and knock merry hell out of as many moles as you can as they pop up randomly. The numeric key pad responds to the 9 mole-holes, so pick your speed and get whacking.

```
10 READ a$:1=30060:FOR j=1 TO  [ED]
60 STEP 2:POKE 1,VAL("&"+MID$( [ED]
a$,j,2)):1=1+1:NEXT:1=10000:FO [ED]
R n=1 TO 6:READ a$:FOR j=1 TO  [ED]
LEN(a$) STEP 2:POKE 1,VAL("&"+ [ED]
MID$(a$,j,2)):1=1+1:NEXT:NEXT: [ED]
DATA 010000460000f06000002000 [ED]
04800000f06000001000000000000f0 [ED]
30000:BORDER 0 [ED]
20 MODE 1:PAPER 0:CLS:PEN 2:CA [OD]
LL &BB03:INPUT "Skill 1-255 "; [OD]
a:POKE 10449,a:MODE 0:x=12:y=8 [OD]
:a=382:b=620:c=2:d=6:e=10:GOSU [OD]
B 40:x=572:y=76:a=244:b=40:GOS [OD]
UB 40:x=32:y=338:a=40:b=580:c= [OD]
4:d=9:e=12:GOSUB 40:y=18:c=2:d [OD]
=3:e=11:GOSUB 40:x=30:y=76:a=2 [OD]
44:b=520:c=6 [OD]
30 d=2:e=0:GOSUB 40:PRINT m$:P [A2]
APER 11:PEN 4:LOCATE 4,23:PRIN [A2]
T y$:PEN 2:PAPER 10:j=9:FOR k= [A2]
1 TO 3:FOR t=14 TO 4 STEP -5:L [A2]
OCATE t,6+4*k:PRINT STR$(j):j= [A2]
j-1:NEXT:NEXT:FOR t=1 TO 700:N [A2]
EXT:CALL 10000:PAPER 0:LOCATE  [A2]
6,12:PRINT t$:FOR k=1 TO 1/3:N [A2]
EXT:GOTO 20 [A2]
40 PAPER 12:INK 0,0:INK 5,15:t [96]
$="Game Over!":m$="+ Whack Att [96]
ack +":y$="Score-":LOCATE 3,3: [96]
PEN 11:PLOT x,y:FOR t=1 TO 2:D [96]
RAWR 0,a,c:DRAWR b,0:DRAWR 0,- [96]
a,d:DRAWR -b,0:MOVER -4,2:NEXT [96]
:MOVER 12,0:FOR t=1 TO (a/2)-2 [96]
:DRAWR b-12,0,e:MOVER -b+12,2: [96]
NEXT:RETURN [96]
50 DATA AF32307532B888CD732821 [25]
40C3221E4ECD2028CD0B28CD6528CD [25]
D028CDCD27CD3A273AB888FE0028EA [25]
C93A3075FE00202C210100223075CD [25]
B8274FCDB82721DCC247111400CDC5 [25]
2741114001CDC52722327511F000ED [25]
52237EFE0020D43A3075FE0228163A [25]
31753C323175FE0B201E3E02323075 [25]
CD9D27C3AB283A [25]
60 DATA 31753D323175FE00200832 [3C]
30753C32B888C92A32753A31753227 [3C]
2847CD29BC10FB11E428CD26283E0B [3C]
322728C9ED5F47AF3CFE032001AF10 [3C]
F8C978FE00C81910FDC92A1E4E11F0 [3C]
00193A3275BDC03A3375BCC0119429 [3C]
CDFF27CDB728CD9A280EC8CDD2280E [3C]
C8CDD22811EC29CDFF27AF323075C9 [3C]
2A3275060BCD29 [3C]
70 DATA BC10FB181B21DB281E0306 [22]
037EE5CD1EBB2020E12310F51D20F0 [22]
113C292A1E4E0E0BE506081A771323 [22]
10FAE1CD26BC0D20F0C9E14BED4318 [22]
7911EC29CD232821ECC11140013A18 [22]
793D28031918FA1114003A19793D28 [22]
031918FA221E4E18BB3E1BCD1EBBC8  [22
3E3ECD1EBB28F9C9060721C05D3630 [22]
2310FB21170BCD [22]
80 DATA 75BB3E04CD90BB3E0BCD96 [75]
BB060721C05D7ECD5ABB2310F9C921 [75]
C55D7E3CFE3A28037718D736302B18 [75]
F2216C75CDAABC217675C3AABC3E0F [75]
F532867532857521807 5CDAABC06FA [75]
0010FDF13D20EAC90E14068C0010FD [75]
0D20F8C9050E0D040C14030B0A0000 [75]
000000000000000000CFCF00000000 [75]
00CFCFCFCF0000 [75]
90 DATA 00459A659A658A00004534 [13]
659A388A0000CF30CFCF30CF0000CF [13]
CF9ACDCFCF0000CFCFCECDCFCF0000 [13]
CF9ACFCF65CF0000CFCF3030CFCF00 [13]
00CFCFCFCFCFCF0000050F0F000000 [13]
00001E3C3C0A000000001E2C3C0A00 [13]
0000001E1C3C0F0F0F00001E3C3C3C [13]
3C3C0A001E3C3C3C3C3C0A001E3C3C [13]
3C3C3C0A001E3C [13]
100 DATA 3C0F0F0F00001E3C3C0A0 [74]
0000001E3C3C0A000000000050F0F0 [74]
0000000000000000000000000044448 [74]
8CC4488000044CC44448888 0000CCD [74]
8D8D8D8CC000088E0F0D0E48800004 [74]
4D8C0C0D0440000CCF0C0F0C4CC000 [74]
0CCC8F0E4F0CC000044F0D8D8E4880 [74]
00088CC4488CCCC00004488CC44CC0 [74]
0000000000000000 [74]
```

SPIRAL NEBULA BY IAN GRAHAM

Dark glasses are recommended for this little colour splash. Try 0.0266 when asked for the density and watch it grow. Press space to see it spin, but don't watch for too long – it'll send you round the bend.

```
10 '
20 ' Spiral Nebula by Ian Graham
30 '
40  FOR  i=1 TO 15:INK i,i+11:NEXT i:LET l=1:LET  i=1:MODE  1:INK
0,0:BORDER  0:PAPER  0:PEN  3:INPUT  "Density  (  approx   0.1-10
):",dn:MODE 0
50 LET l=l+dn:LET i=i+1:IF i=16 THEN LET i=1
60 PLOT 320,200,0:PLOT 320+l*COS(A),200+l*SIN(A),i:LET  a=a+dn:IF
INKEY$=" " THEN GOTO 80 ELSE GOTO 50
70 ' Rotate
80 DIM i(15):FOR i=1 TO 15:LET i(i)=i+11:NEXT i
90 FOR I=1 TO 15:LET I(I)=I(I)+1:IF I(I)>=27 THEN LET I(I)=1
100 INK I,I(I):NEXT I:LET a$=INKEY$:IF a$=" " THEN RUN ELSE  GOTO
90
```

DISC MENU

BY CHRIS WOOTTON

Simple enough – running the program will display the disc catalogue on the screen. Make your choice using the cursor keys and press (R) to set things rolling.

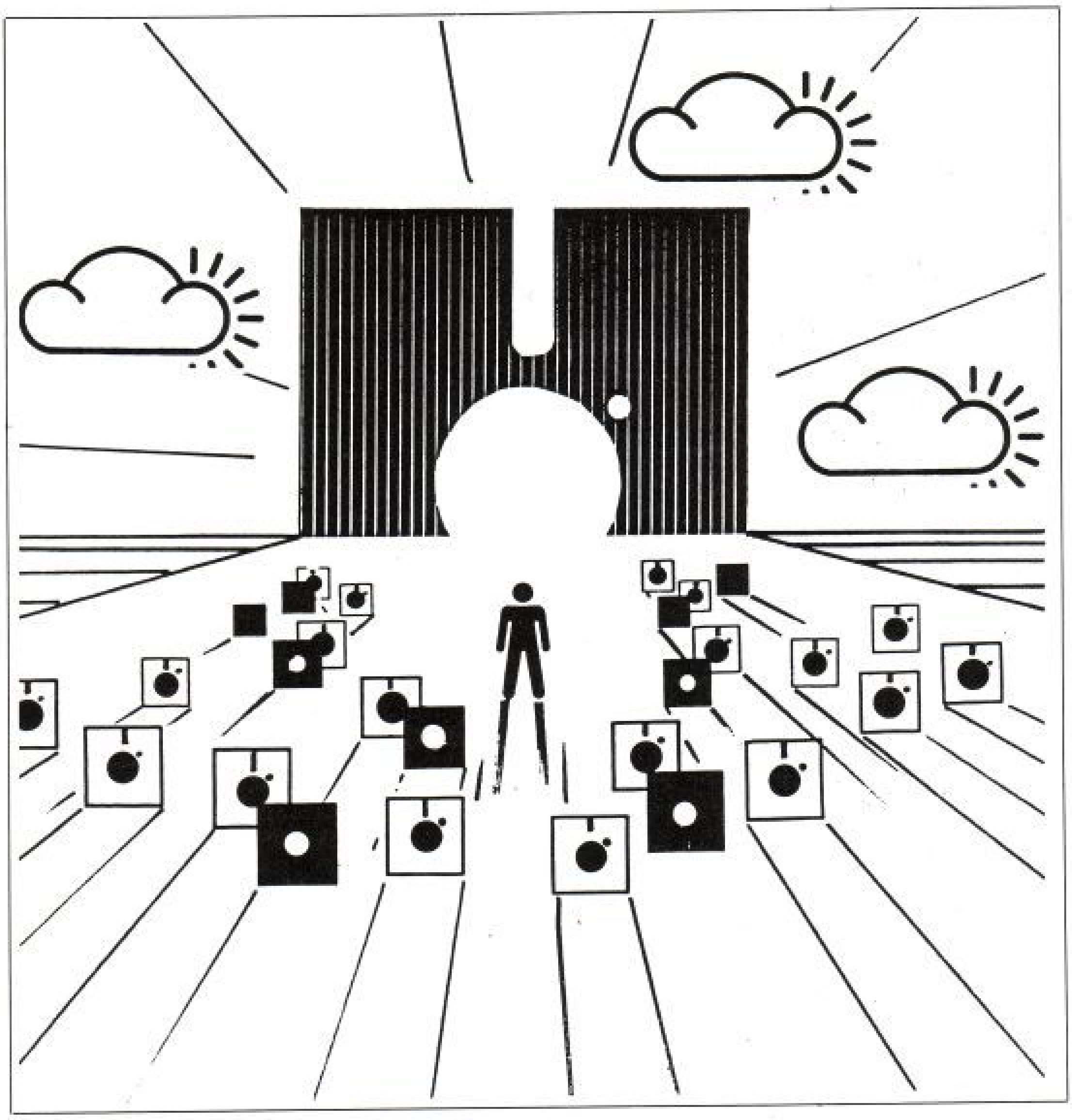
```
1 'Disc Menu
2 'by Chris Wootton
3 '
10 MODE 2:FOR a=&BF01 TO &BF07:READ v:POKE a,v:NEXT:CAT:x=1:y=4:v=VPOS(#0)-2
20 DATA 205,96,187,50,0,191,201:x$="":FOR a=0 TO 11:LOCATE x+a,y:CALL &BF01
30 x$=x$+CHR$(PEEK(&BF00)):NEXT:LOCATE x,y:PRINT CHR$(24)x$CHR$(24)
40 i$=UPPER$(INKEY$):IF i$="" THEN 40 ELSE IF i$="R" THEN RUN x$
50 yn=y+(i$=CHR$(240))-(i$=CHR$(241)):xn=x+20*((i$=CHR$(242))-(i$=CHR$(243)))
60 IF yn<4 OR yn>v OR xn<1 OR xn>61 THEN 40 ELSE LOCATE xn,yn:CALL &BF01
70 IF PEEK(&BF00)=32 THEN 40 ELSE LOCATE x,y:PRINT x$:x=xn:y=yn:GOTO 20
```

ESP TESTER

BY STEVE LEAK

Can you predict the future? Do you always know what someone else is thinking? If so, this is the progrette for you. Forecast which of the panels will light up next and see.

```
10 DEFINT a-z:c=0:t=0:MODE 0:BORDER 0:IN
K 0,0:INK 1,18:INK 2,6:INK 3,2:INK 4,24:
INK 5,9:INK 6,3:INK 7,1:INK 8,12:INK 9,2
6:PEN 9:PRINT SPACE$(5);"ESP Tester":LOC
ATE 1,4:PRINT "Tries: 0  Correct: 0"
20 WINDOW#1,6,10,6,14:WINDOW#2,11,15,6,1
4:WINDOW#3,6,10,15,23:WINDOW#4,11,15,15,
23:FOR p=1 TO 4:PAPER#p,p:CLS#p:PEN#p,0:
LOCATE#p,2,2:PRINT#p,p:NEXT:LOCATE 5,25:
PEN 9:PRINT "Guess? (1-4)":WHILE t<24:RA
NDOMIZE TIME:x=(RND*3)+1
30 a$=INKEY$:g=VAL(a$):IF g<1 OR g>4 THE
N 30 ELSE t=t+1:LOCATE 7,4:PRINT USING "
##";t:IF g=x THEN PRINT CHR$(7);:GOSUB 5
0 ELSE SOUND 1,478:GOSUB 60
40 WEND:GOSUB 80:END
50 c=c+1:LOCATE 19,4:PRINT USING "##";c:
GOSUB 60:RETURN
60 PAPER#x,x+4:CLS#x:GOSUB 70:FOR d=1 TO
 1000:NEXT:PAPER#x,x:CLS#x:GOSUB 70:RETU
RN
70 LOCATE#x,2,2:PRINT#x,x:RETURN
80 MODE 1:PRINT "Tries:";t:PRINT:PRINT "
Correct:";c:r=((c/t*4)-1)*100:PRINT:PRIN
T "ESP Rating:";r:PRINT:IF c=0 THEN PRIN
T "Rubbish!" ELSE IF c>0 AND c<5 THEN PR
INT "Lower than chance." ELSE IF c>4 AND
 c<8 THEN PRINT "No different from chanc
e."
90 IF c>7 AND c<12 THEN PRINT "Higher th
an chance." ELSE IF c>11 AND c<24 THEN P
RINT "ESP?" ELSE IF c=24 THEN PRINT "$#!
^"
100 LOCATE 1,25:PRINT "Another Run? (Y/N
)":a$=LOWER$(INKEY$):IF a$="y" THEN RUN
ELSE IF a$="n" THEN RETURN ELSE 100
```



Managing fine

Kenn Garroch casts his eye over a new disc management system from the boys at Goldmark.

Nirvana is rather an odd name for a disc management system, but I suppose they had to call it something and 'Disc Management System' is rather dull. The facilities offered are very useful; indeed, if you have ever accidentally erased a file, or messed up a copy by inserting the wrong disc and forgetting to copy protect it, you may wonder how you ever managed without it.

At its simplest level, Nirvana provides facilities to copy, rename, erase, and change the file attributes of files. It can also format and copy discs. In addition, it provides facilities to read the disc map and sectors editor and save a complete disc to tape. When files are saved to an Amstrad or CP/M disc, the data is not saved on consecutive sectors as this would cause the disc to become clogged up when files are erased – the space released may not be big enough to accommodate a new file. Instead, a map of free sectors is known to the directory and the saved files are spread over the sectors depending on where they are free. Reading back the file is simply a matter of tracing the sectors via the map and reading each in turn; erasing the file is just a matter of marking the necessary sectors as free. The map disc option of Nirvana shows the layout of each file on the disc, giving the track and sector numbers used to store the file. This can be displayed on the screen or sent to the printer. This latter option is useful when a file has somehow become corrupted and you need to trace where it is stored. Using the print-out and the sector editor, it is possible to read all or most of the file and possibly to restore it.

The sector editor allows you to read and write the disc at its lowest level. The contents of each sector are displayed in two parts; the lower 256 bytes and, on pressing f2, the upper 256 bytes. The display is in two halves: the contents of the sector in hexadecimal numbers (16 rows of 16 numbers), and the contents in ASCII characters. Either of these can be edited and then saved to the disc, allowing almost any form of modification to be made. One problem with the editor is its lack of instructions. I could not find a way to exit from it apart from turning the Amstrad off – the CTRL+SHIFT+ESC is trapped by the program so that it does not work.

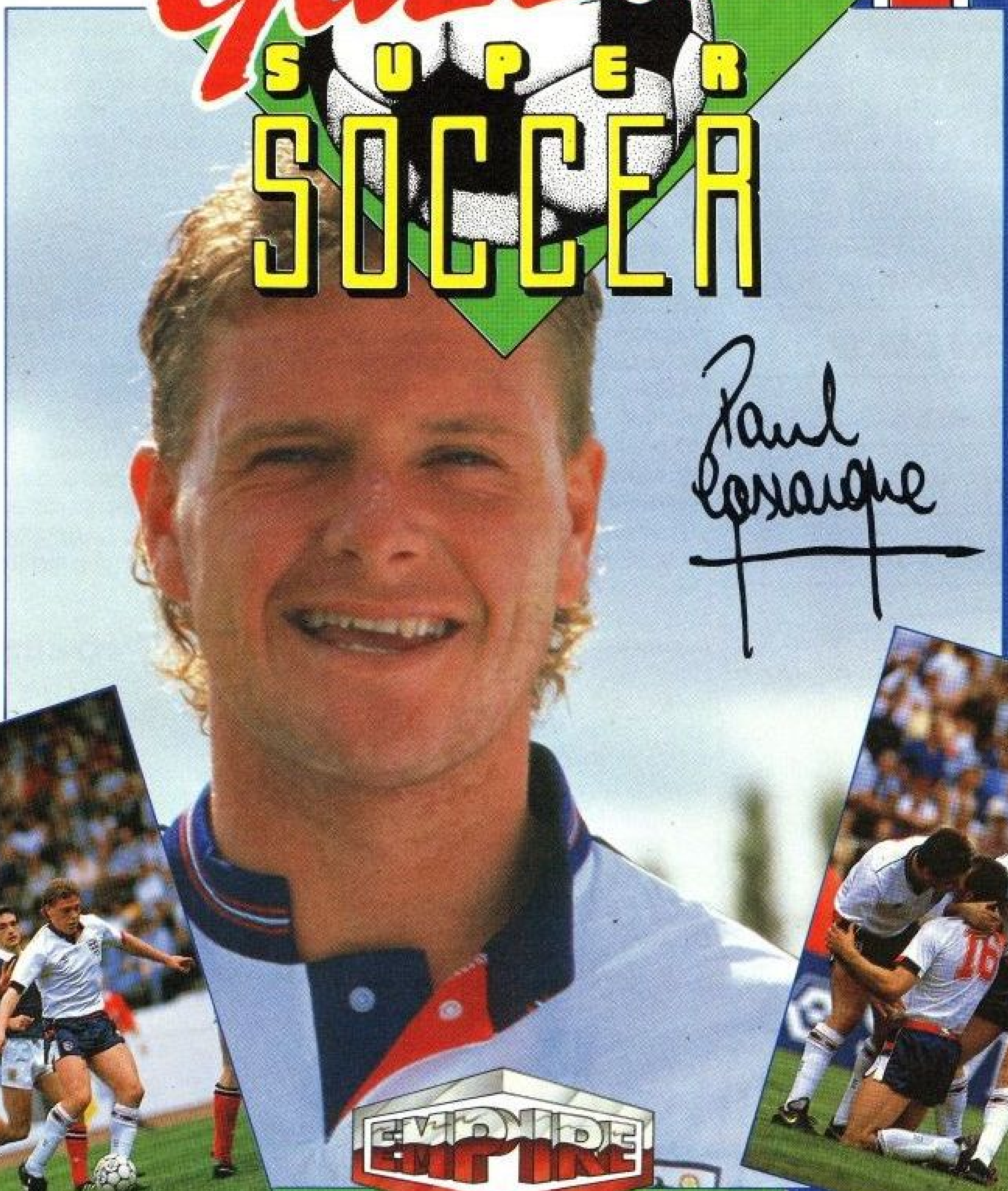
The big drawback with trying to use the sector editor to correct disc problems is that you need to know a reasonable amount about how the disc is set out. Unfortunately, the manual – at only eight pages – is very limited and is particularly lacking in information, although it does give a few examples on how files and filenames are stored. Even this is rather brief, but almost no information at all is given on many of the options. Some of these are admittedly quite simple, but it would have been nice to see more information on disc formats, recovering files, discs, etc.

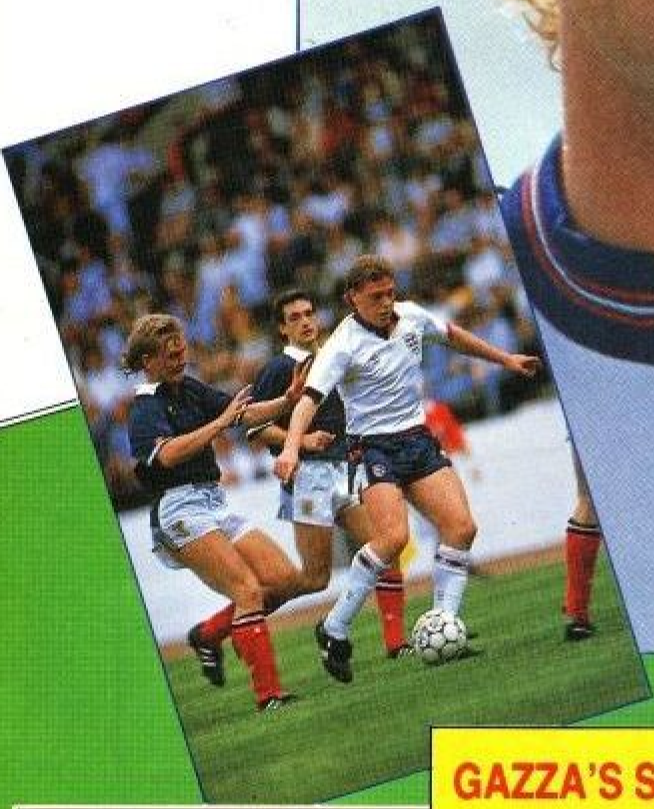
The tape backup functions take a whole disc of data and save it to the cassette port in around fifteen minutes. Other options allow selected files to be saved and restored with no user intervention. This facility could be used either to make backup copies of discs or to free disc space, by copying rarely used files and programs to tape and then re-loading them when they are needed.

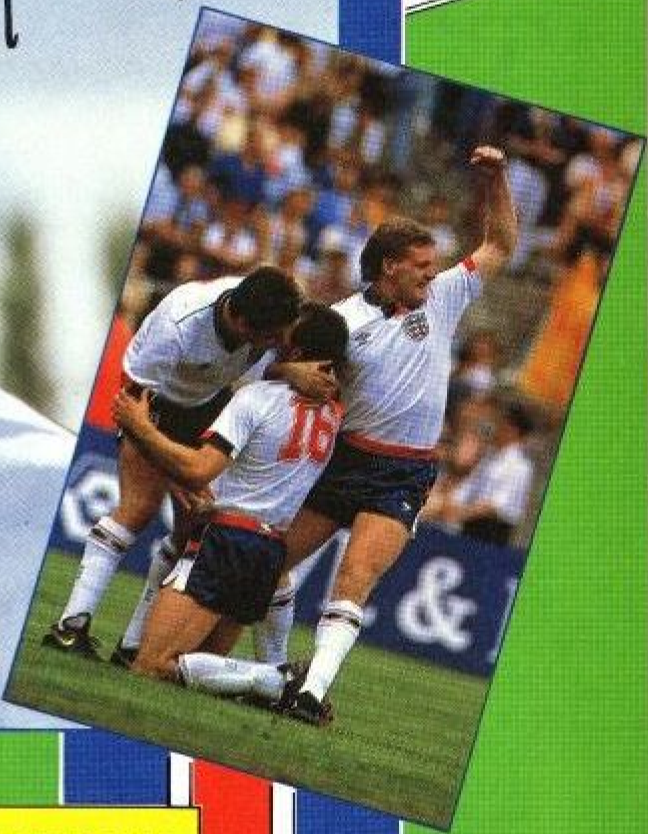
Nirvana is a software package of the type that I would consider indispensable for anyone who uses discs a great deal. If you do not buy this one, you should surely have one that offers similar facilities.

Product:	Nirvana
Producer:	Goldmark Systems 51 Comet Road Hatfield Hertfordshire AL10 0SY Tel. 070 727 1529
Price:	£15.00 inc P&P

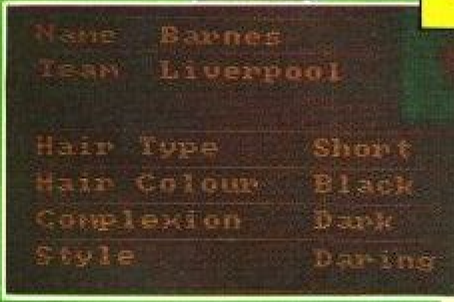
Gazza's SUPER SOCCER

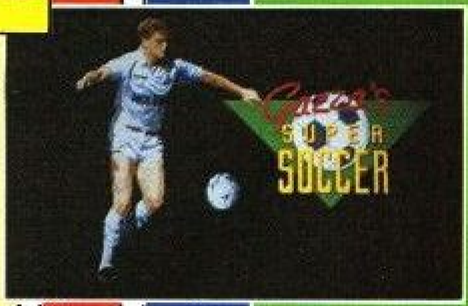






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Brunword revisited

Top boffin Phil Craven examines Brunning Software's Brunwood 6128 word processor and discovers what he's been missing out on all these years.

There are often times when I cannot believe my own stupidity and just recently was one of them. Here I've been, sitting at my CPC, frequently using my word processor in blissful ignorance of what I've had on my shelf for months. I remember it arriving and I did give it a cursory glance along with testing it out for one of our projects, but that was all I did. To be fair to myself, I do remember some not very good publicity it attracted a few years ago and so I left it to gather dust among my infrequently used software.

How mistaken I was. The product is Brunning Software's *Brunword 6128* word processor package and before you 464 owners rush to leave us, let me point out that a 464 version of what you are about to read is available.

A short while ago I had reason to look again at Brunword 6128 and what I saw amazed me. The more I looked the more astounded I became. Now I'm not knocking advertisements. In fact, without them we would be very much in the dark and I know of none that make false claims. But isn't it true that all the ads for the type of program you want make their product sound just what you're looking for? So much so that it's difficult to choose between them. However, this particular word processor has so much incorporated into it that at first I thought it wasn't possible and that I'd simply misunderstood. If you don't already know, you're just not going to believe what I am about to tell you. But read on because it's absolutely true.

Remember that we are talking about a computer with only 128k of memory space. The program is supplied on disc which takes less than 15 seconds to load. When loaded the computer contains the word processor program itself together with space for an eight to ten page document, a spell checking program and, get this, a 30,000 word dictionary which is expandable to 35,000 words. Think about it. Let's say that each word has an average length of five characters which is probably on the short side. 5 x 30,000 = 150,000 (roughly ????) and that's just the unexpanded dictionary! We don't have that amount of memory in the CPCs. You can see why I thought I'd got it wrong. In fact it's done by a



clever spell checking program and method of word storage. And there's more. The word processor has a work area which contains the document being worked on and a files area which can contain as many other documents as space will allow. If they are short documents, then more of them can be contained.

All the above is loaded into the computer's memory at the outset, so that the program disc need not be used again unless the dictionary has been modified, when it will need to be saved of course. I'll come back to the word processor later, but that's not all that Brunword 6128 has to offer. Included on the disc is a simple but flexible database, or card filing system program which allows the creation of files suitable for data storage, mail merge and label printing.

Processor

Before we run through the features we would expect in a word processor, let me point out a few unexpected ones. The screen can be set to 40, 80 and even 120 column display. Yes, 120 columns on the screen without any sideways scrolling, it's true you need good eyes but it works and can be useful with wide carriage printers. Encrypting is another unusual feature. You can enter a code word and save your documents to disc in an enciphered form. This prevents anybody else from reading your documents – including you if you forget your original code! By manipulating and moving temporary rulers you can actually pick up a paragraph and move it across the screen in either direction and make it narrower or wider at will. As you do it, the whole paragraph alters its shape and position in real time. Very good for better page layouts. The 'save' option is also different. You get a choice of saving the work area or the work + files areas together. You could, for instance, be cobbling a document together from several others in the files area and need to break off. You can save the whole lot to disc in one go and load up again later on. Another unusual trick that Brunword 6128 has is its 'group files' printing feature. Using this option enables you to print out a multipage document, such as a book, without the restriction of the work area's eight to ten pages. The last trick I want to mention in this part is Brunword's ability to eat up words. Deleting words isn't unusual you might say and you'd be right but how many processors are capable of being sick afterwards? Yuk! it's true. It can delete and undelete words. In fact it can delete and undelete the whole text if memory space permits. This feature makes a quick and easy method of picking up a sentence and relocating it somewhere else. Much simpler than marking text and then moving it.

It's not bad, is it? And I've had this program wasting away for months. Now we come to the more standard word processor features which I'll gloss over pretty quick. As we would expect Brunword allows all the usual word processor features such as setting left and right margins, tabs, justify and unjustify the right margins of each paragraph or the whole text, centre line, insert, overwrite and so on. It also allows the user to redefine certain characters which is both excellent and unusual. Other usual features include mark, move and copy text, weave text which allows a file to be inserted into the text, find and replace plus many more.

I don't want to dwell on these as most of them are common in word processors as are the printer functions such as redefining printer control codes, headers, footers, auto page numbering, number of copies, etc.

Spell checker

Spell checking programs are not at all unusual but what is unique about this one is that the dictionary resides in the memory. All 30 to 35 thousand words of it. This of course makes the process very fast indeed, since no disc accesses are needed. From writing text to starting the spell check takes just three key presses. With each word found that isn't in the dictionary the choices Save Edit Help Continue are offered. Save will add it to the dictionary, Edit allows you to alter the wrongly spelt word, Help will cause a dictionary search for all similar words which you can stop as soon as the correct one appears.

A few more key presses and the incorrect word is replaced in the text by the correct one. Apart from its speed this is all standard spell checking stuff. What is far from standard is Brunword's ability to instantly check the spelling of a single selected word. It can only happen because the dictionary is in the memory. One key press (f3) is all that's needed and the word under the cursor is immediately checked. As before, all the options are available including the replacement of the incorrect word in the text.

The database

Datafile, which is included on the disc, is not only designed to work with Brunword for mail merging and label printing, but it can also be used as a fully fledged database in its own right. It is capable of selecting files from any number of fields and of sorting them alphabetically, numerically and even by date. In a nutshell, Datafile is used as the main store for such data as names, addresses, etc. from which a group may be selected to receive personalised letters. A Datalink program performs the connection between the word processor and the database.

Overall view

The word processor alone is very impressive, offering many unique features, it is fast and easy to use. The screen layout is uncluttered and yet incorporates all necessary information. The spelling checker is superb except in one thing, it doesn't seem to like apostrophes. So the word ISN'T, for example, is seen as ISN, which of course is not in the dictionary. Neither do I want it in the dictionary in case it occurs by mistake in a document and the checker won't spot it. I can live with that though. The database, whilst not in the league of specialised relational databases, is nevertheless extremely useful as both a file card system and as a mail merge/label printer file creator.

Have I saved the best bit until last? Judge for yourselves. You get a word processor, a spell checker and a mail merge/database/label printer all in one package for only £30. It may sound like I've just written a very long advert for Brunword 6128 but I haven't, I'm just so impressed. ●

Winter's tale

The Hairy Hacker delivers a couple of quick ones.

Happy New Year Already! Blows my chance of a decent winter's hibernation. Yes folks, it's Resolution Time, and I'm resolving never to publish a duff poke. We'll see how long that one lasts, won't we?

The mail isn't quite up to last month's bumper quality, but we've a poke or two left, and the first one's coming up.

It comes in an interesting letter here from Robert Vale in Gosport. Well, the first bits about pressing 'R' for the next level in Galactic Plague, and ditto with Shift-'A' in Roland in the Caves are pretty dull, but the Robocop-bender is a wonderful piece of convolution.

Now this'll sound a bit tricky, but bear with me: when you load a Robocop game, there are two bits of code: a short bit, followed by a long bit. You can hear them going in on a 464, but you could use a 6128 as long as you've got a tape deck with a counter on it.

Play the game as usual, and get on to part two. Note the tape counter number when the long bit for part two begins and then Die on block two – This shouldn't be too tricky. When it tells you to rewind to start part one again, load the short bit of part one, and fast forward to the long bit of part two that you noted the number of. If all goes well, part two will load. If it doesn't, there's not a lot I can do about it.

When you're loaded up, there will be no energy or life counter but don't worry because all you can do is fire. Now zap away until all the bullets have run out, and then you get to load block two again. Do it properly this time, i.e. load both the little bit and the big bit of part two and stand back and admire in amazement; no life counter, and immortality! Very nice Rob, though I find the idea of shooting the woman you're supposed to be rescuing if you have less than half energy a little disturbing.

It is, however, a kludge with more twists than an earhole, and wins the Albert Pringle Prize for Extreme Obscurity. Never heard of Albert Pringle? Don't worry, he's pretty obscure. You'll get somethin' for it, Rob.

By the way, if anyone else sends in Galactic Plague or Roland in the Caves pokes, I'll SCReAm!

To wrap up this month's rather brief effort here are a couple of bits that didn't make it into my Christmas Grotto last issue – Blasteroids and Speedzone pokes.




```
1 'SPEEDZONE hacks
2 'by John Girvin
3 'August 1989
4 '
10 MEMORY &A1FF:MODE 1
20 LOAD"!speedy",&A200
30 POKE &A267,&C3:POKE &A268,0
40 POKE &A269,&A0:addr=&A000
50 RESTORE
60 READ byte$
70 IF byte$="SPEEDZONE" THEN CALL &A200
80 POKE addr,VAL("&"+byte$)
90 addr=addr+1:GOTO 60
100 '
110 'Inf. lives
120 DATA 3e,a7,32,32,28
130 'Invulnerability
140 DATA af,32,ed,27
150 '
160 'leave 1800-200 in
170 '
180 DATA 11,38,bf,d5,a4,48,4c,46
190 DATA 08,89,21,00,20,e9
200 DATA SPEEDZONE,4a
```

```
1 'BLASTEROIDS hack
2 'By John Girvin
3 'June 1989
4 '
10 RESTORE:addr=&310
20 READ byte$
30 IF byte$="MUKOR" THEN MODE 1:CALL &310
40 POKE addr,VAL("&"+byte$)
50 addr=addr+1
60 GOTO 20
70 DATA 21,00,01,11,00,02,3e,16
80 DATA cd,a1,bc,21,24,03,22,05
90 DATA 01,c3,00,01,21,58,21,36
100 DATA 00,a4,48,4c,46,06,89,c3
110 DATA 24,13,MUKOR
```


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2	(NE)	Batman – The Movie	Ocean
3	(2)	Robocop	Ocean
4	(1)	Crazy Cars	Hit Squad
5	(NE)	Short Circuit	Hit Squad
6	(6)	Twin Turbo V8	Code Masters
7	(5)	Top Gun	Hit Squad
8	(NE)	Rampage	Hit Squad
9	(4)	Mig 29	Code Masters
10	(NE)	Nigel Mansell's Grand Prix	Alternative
11	(3)	Batman 3D	Hit Squad
12	(NE)	Shinobi	Virgin
13	(NE)	Ghosts and Goblins	Encore
14	(NE)	Power Drift	Activision
15	(NE)	Cobra	Hit Squad
16	(11)	Crazy Cars 2	Titus
17	(NE)	Wizball	Hit Squad
18	(12)	Dragon Ninja	Ocean
19	(NE)	Theatre Europe	Summit
20	(17)	Emlyn Hughes International Soccer	Audiogenic

Last month's position in brackets
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Amaze your friends and impress your neighbours with your drawing dexterity thanks to this board game conversion.

Do you have the skill to put Rolf Harris to shame? Is Tony Hart just a Johnny come lately? Or is your drawing reminiscent of the time you brought up that Indian curry after downing fifteen pints of John Smith's Super Strength Lager?

Well, if it is the former, then you will be a dab hand at *Pictionary*. If you happen to belong to the latter category, like me, you can still play but your team will certainly not be letting you do the drawing.



Pictionary is purported to be the 'in' game for yuppies, following on from *Trivial Pursuit*, but it is aimed at a slightly wider market – anyone who can speak can play. Brainpower is not required. This is a multi-player game and a conversion of a board game, but one person can play on their own, if they happen to be so unsociable, or so physically repugnant as not to have any friends.

In teams of a minimum of two people, you must progress around the board, trying to guess what your partner is drawing. When the opposition get theirs wrong, you must try to guess that too. Cards are supplied, although somewhat miniaturised so it helps to be able to read, and these contain various colour-coded categories that denote subjects. The colours on the board (on screen) determine what type of object the 'artist' is going to attempt to depict before the timer runs out. Easy enough if it happens to be a dog and the artist does not suffer from Parkinson's Disease, but some of the more cunning cards will have you drawing an elephant, which will have people jabbing the space bar to indicate they know what it is, only to get it wrong as you add the arrow that points to the elephant's tusk. There are five general subjects (all play, difficult, action, object and person/place/animal) containing 2,560 individual topics in all. With the vagaries of human drawing, it will be some time before tedious repetition sets in.



The instructions are not particularly comprehensive, leaving the players to find their way around initially. But, as I said, you can dig up a few carrots and spuds out of the garden and play with them, so getting the hang of it does not take long.

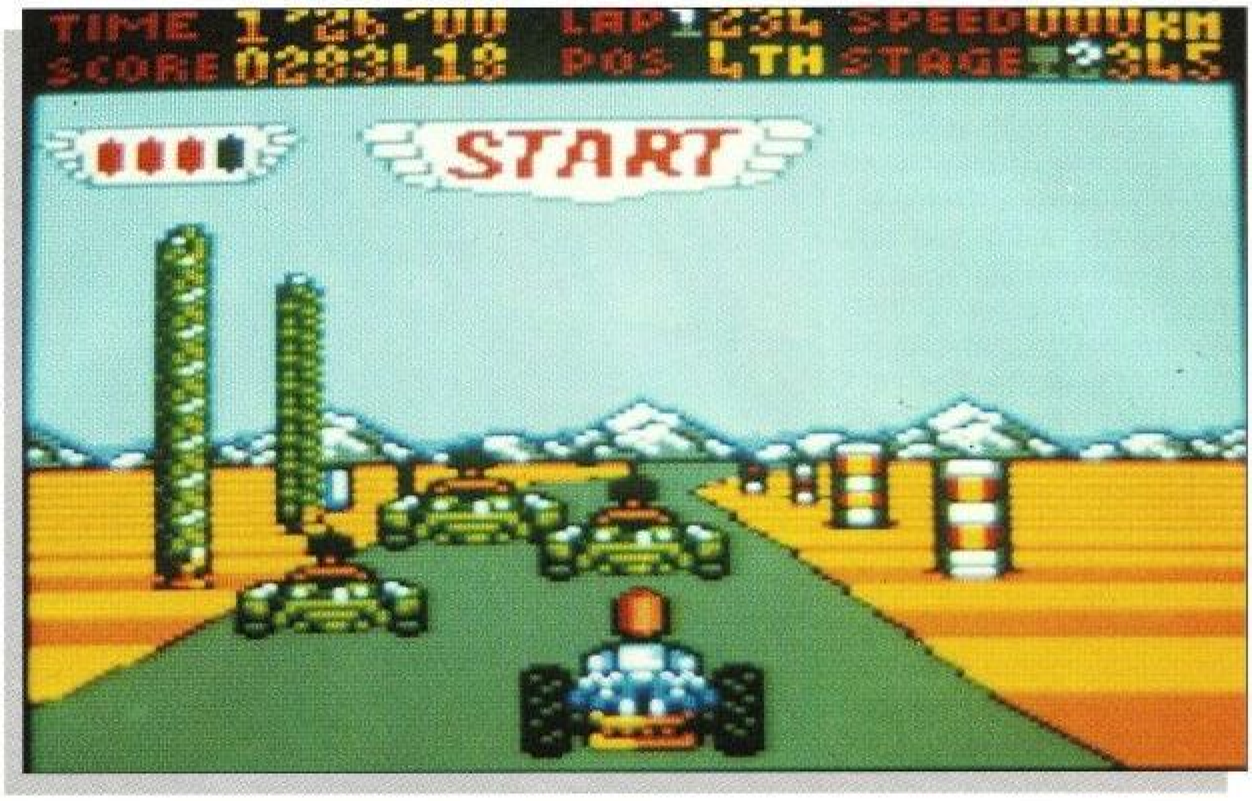
To aid in the drawing process on screen, there is an art package, of sorts, which features fills and patterns, ellipses and boxes. The trouble is that you will not have the time to draw very decorative pieces.

Pictionary is a fun game, but what makes it fun is the human interaction. You do not get the computer chortling with laughter at your feeble attempts to draw, and even if you did, you would probably be tempted to shove the disc through the monitor.

You need at least four people to make the most of the game, and, if you have that many, you may as well play the boardgame.

Mark Luckham

ROUND-UP			
NAME	Pictionary		
SUPPLIER	Domark	PRICE	£9.99
74%	69%	57%	62%
GRAFFIX	SONIX	PLAYABILITY	OVERALL



Power Drift

A conversion of the popular coin-op which has you racing up ramps and round corners with breathtaking speed.

In my time, which has been a very, very long time indeed, as I am in fact a pan-dimensional reviewer from Ursa Minor, I have seen hundreds, thousands, nay countless numbers of racing games. Such a number indeed, that if they were stacked one atop another on your planet known as Earth, then the pile would stretch so far into space that it would prod the Sun itself, causing such a solar flare that all life on the planet as you, me, or even my inter-dimensional milkman know it, would end. So do not do it Earthlings.

But now I have the immeasurable pleasure of being able to report that I have seen a racing game that is different from all the others, so different and unnaturally exciting that the essence of your very being will tremble and tingle, and induce a weak-at-the-knees feeling.

That game is called *Power Drift*, and is from one of your own Earth companies; one that goes by the name of Activision. Power Drift is an arcade conversion, that is beyond the Amstrad CPC's ability to reproduce, and yet it has been.

There are twenty-seven sections of track, with six selectable locations, and a choice of twelve different drivers. And different they are too; not only do they have their own little picture, but they drive at different speeds, or would if you drove the car to its full potential.

Racing over a mighty four laps, the course strays this way and that, up hill and over dale and, strangest of all, along roller-coaster-like sections of elevated track. A slip here leads to an unpleasant demise below! Your buggy has high and low gear settings as normal, and acceleration and brakes, although should you stop accelerating, you start to slow down. Unlike those in the recent *Continental Circus*, the opposing drivers here go hell for leather, so finishing in the first three positions, which is necessary to advance to the next stage, is far from easy. When the drivers in front start slewing around and you are on an elevated section trouble is only a few revs away.



Equally, however, unlike many driving games, a full-speed collision with another driver's rear end is far from fatal; rather it is just as likely to run them off the road as it is you.

The graphics and speed of the racing are all very good, and the gameplay is quite difficult, which makes a first-three placing a real achievement. Practice makes life easier, but it is good to see that the game is well balanced enough to give encouragement without being easy.

Personally, I would have thought that mere Earth programmers would have had a difficult task converting the heaving gameplay of Power Drift to the humble CPC, but the coders at Activision have done a quite splendid job.

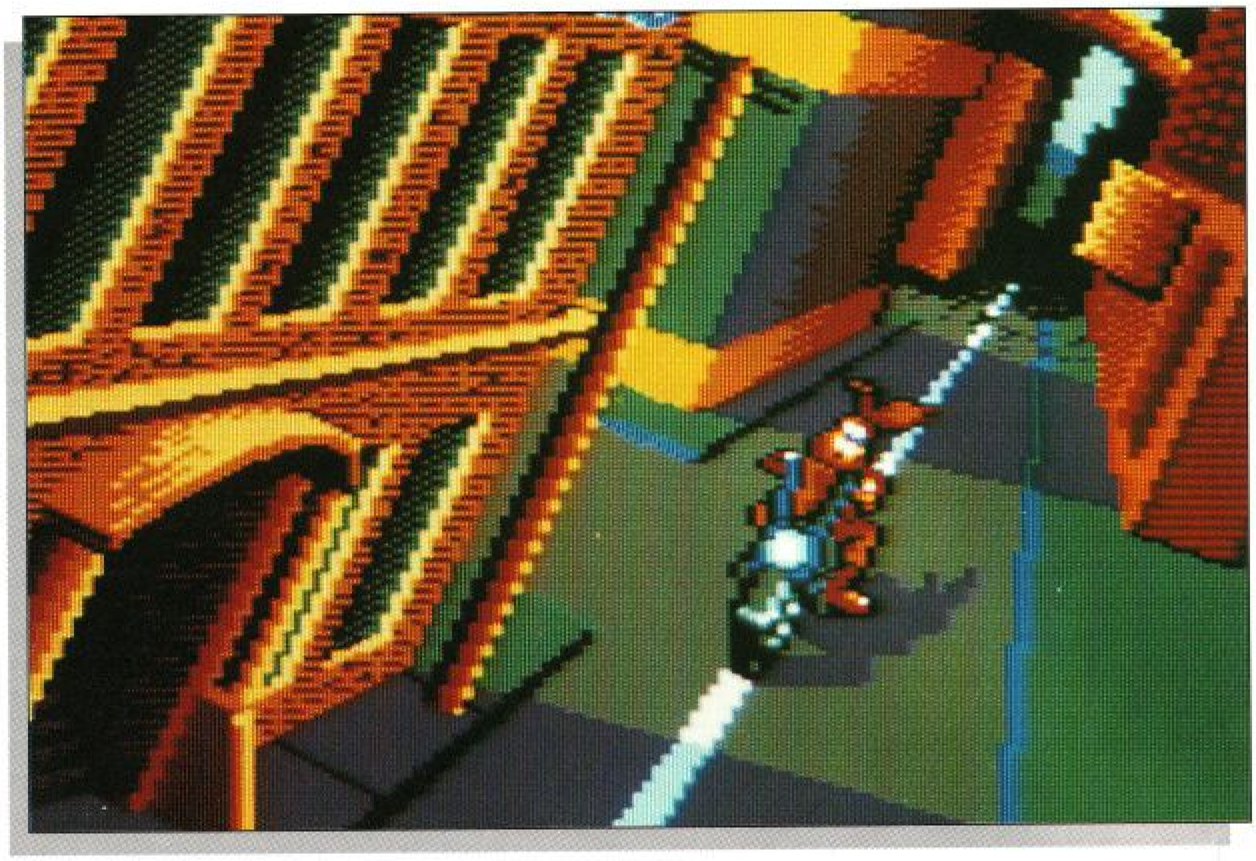
Mark Luckham

ROUND-UP

NAME	Power Drift		
SUPPLIER	Activision	PRICE	£9.99
89%	70%	91 %	90%
GRAFFIX	SONIX	PLAYABILITY	OVERALL

Moonwalker

Wacko Jacko fans will love this one as their hero plods round a maze collecting a rabbit costume.

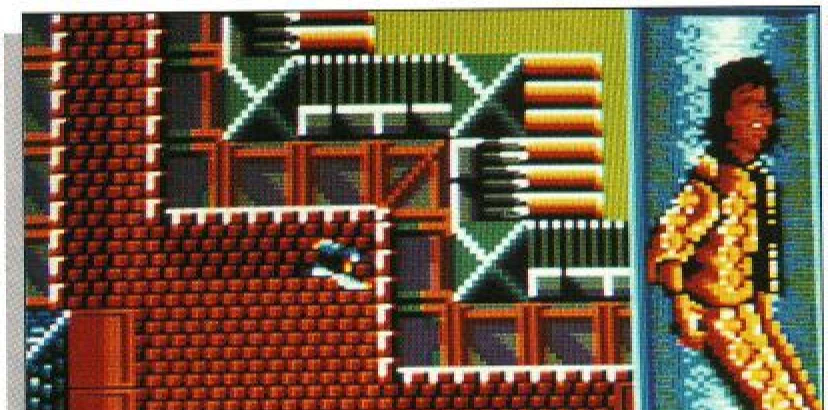


You've heard the melody, read the book, seen the movie, eaten the reviews in sheer desperation and, just when you thought it was remotely safe to utter the word 'bad' in normal conversation again – sitting on your lap is US Gold's home computer version of *Moonwalker* "as endorsed by the Superstar himself".

Well, now you've got it, load up and give it a whirl. It might not be quite as bad (no pun intended) as you thought. Surprisingly enough, it isn't.

As you may well imagine, with Mr Jackson's name behind the game, it is a glossy, well turned out production with gimmicks a-plenty taken from the original film set which all come together in the form of a four-part chase 'thriller' (Oh dear, dear).

But wait for it. Before you even get a chance to make a grab for the joystick, the cassette loading sequence will give you a sneak preview of the goodies in store as Michael Jackson's feet strut their funky stuff across a spotlit dancefloor.



In fact, this is one of the game's more infuriating points. It takes almost as long to load, taking in all the intro bumph and level load-as-you-go system, as it does to play.

But, all this aside, once you reach the starting blocks, racing around the maze on level one is a pleasure with the joystick. The first objective is to find the various sections of a rabbit costume which will enable you to slope off in disguise to the next stage on a concealed motorcycle. Rather unorthodox you might think, but then, it is Michael Jackson after all.

Lying in wait to ambush you in your quest are such ghoulish adversaries as granny and her grandson, the cowboys on horseback, the beefy Biff brothers and last, but by no means least, some fiendish Japanese tourists.

In line with Mr Jackson's glitzy pop career, instead of losing a life each time you are outwitted by a baddie, they rob you of one of your precious platinum discs. Starting off with the grand total of twenty, your discs are meant to last throughout all four levels.

A handy radar screen helps to guide you through these preliminary stages and good information displays are provided throughout the slick set changes (loading delays omitted).

In the higher levels, you actually get your hands on a gun, so make the most of it and get your own back on the goons who have been chasing you around.

At the end of the day, Moonwalker isn't a bad little mover. The game is well-designed with high quality graffix, but there is one major drawback. At the risk of bringing the wrath of avid Jackson fans onto myself, I would urge all non-believers to play the game with the sound off. It actually is 'bad'.

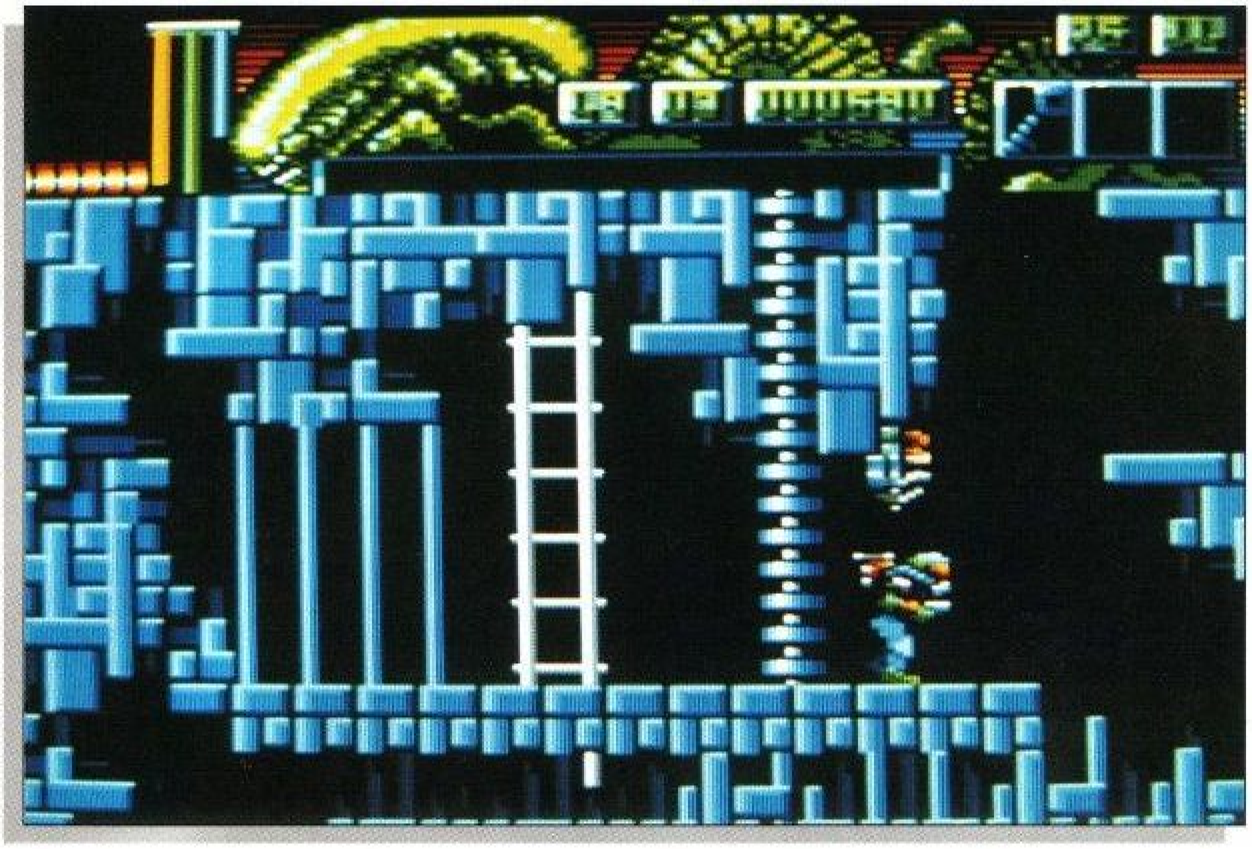
Chris Knight

ROUND-UP

NAME	Moonwalker		
SUPPLIER	US Gold	PRICE	£9.99
67%	0%	69%	65%
GRAFFIX	SONIX	PLAYABILITY	OVERALL

War Machine

Avoid the acid baths as you trip your way around Asteroid XR27B armed with a plasma blaster.





In space no-one can hear you scream. That may be so, but in this serious 'gun down every alien in sight or the world's for it' budget blockbuster from Players, each time you inadvertantly take a dip in the abundant acid baths on Asteroid XR27B, your pained expostulations are clearly printed in bold type across the top of the screen just to remind you. And boy does it hurt.

Asteroid XR27B may sound like the latest in a long line of souped-up, glorified Ford Escorts but, in reality, it is a strategically important mining installation which has been overrun by Earth's sworn enemies, the Alien Syndicate.

At this very moment, under the leadership of their evil queen, plans are being made to fit Earth with a large pair of concrete overshoes and push her off the end of the galactic pier.

Armed only with a plasma blaster, a couple of grenades and a secret weapon which you have to collect and put together on the way, your mission is to thwart this grisly plot and kill the evil queen so that we earthlings can once again sleep easily in Suburbia.

Sound good? It isn't half bad.

Before getting down to the serious alien bashing, you would do well to try out a few reconnaissance missions to get used to the maze of caverns under the Asteroid's surface.

Once you have got your bearings, entry to higher levels is achieved using the tried and tested key to the door routine.

But finding these entry portals can be tough at first and don't go rushing through any of them headlong; you just don't know what is going to be on the other side to greet you.

Movement around the combat zone is relatively smooth and enjoyable using the joystick, although timing is all important for those diagonal leaps from crevice to crevice in the caves. Just when you are getting a little too casual about it; whoops... oh look, it's an acid bath..

Flicking through the play instructions, you will also find a note about scaling the many ladders within the complex. Take heed, it saves a lot of frustration later on, as I found to my expense.

War Machine's game plan may not be entirely original, but there are some nice touches in this extraterrestrial combat which provide an atmosphere to help you take on the role of the good guy marine. Not to mention a whole host of biotechnological baddies.

Colourful, well-defined graphics and a nicely produced sound backing all add to the subterranean air of the game and should you, by some stroke of ill fortune lose a life, you certainly know about it.

War Machine is certainly not designed with five minute playarounds in mind. This is one you will stick to, and, each time you get a little further, there may well be two thoughts floating around your space helmeted skull: (1) I joined the marines for the lifestyle, nobody every warned me about this and, (2) Isn't there anything I can do to inflict large amounts of pain on those acid baths.

Chris Knight

ROUND-UP			
NAME	War Machine		
SUPPLIER	Players Premier	PRICE	£2.99
71%	68%	78%	76%
GRAFFIX	SONIX	PLAYABILITY	OVERALL

FUTURE SHOCK

A new year dawns, and a new decade beckons. Just what have those software houses got up their sleeves for the CPC gamester this year? Well, despite a great reluctance on the part of the bigger companies, to give away their secrets, the ACU spy ring has compiled the following dossier which must be memorised and destroyed.



Accolade

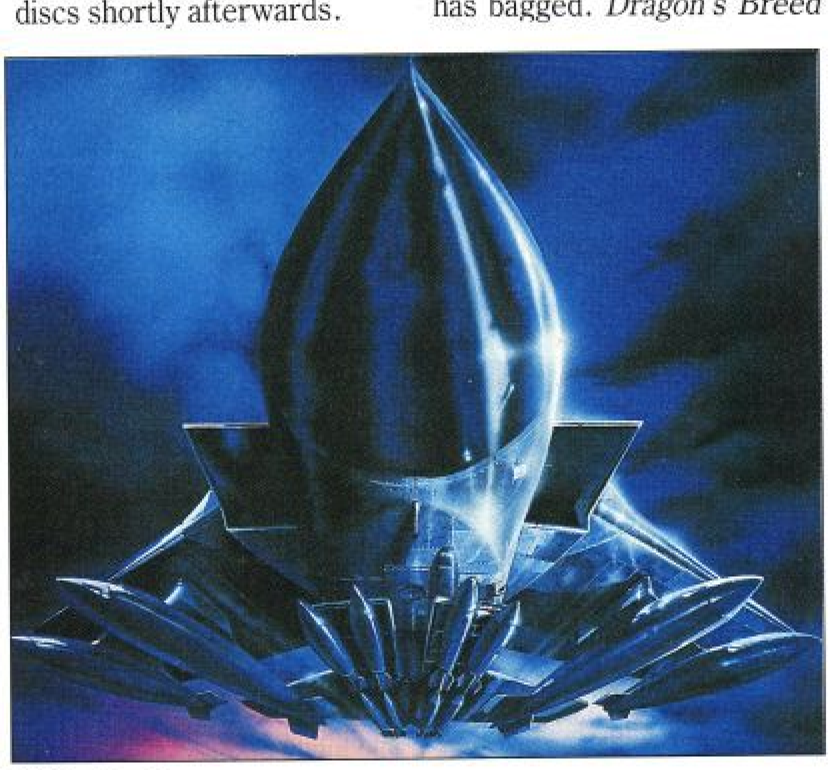
If you're a fan of the Jack Nicklaus series of golf games then *JN Championship Courses* and *JN International Courses* will have your wallet quivering with dismay. That's it at the moment from Accolade, the only other contender for the Access card being *Test Drive II – The Duel* which was due to have been released in December, with car and course expansion discs shortly afterwards.

Activision

Well, *Fighter Bomber* had been delayed yet again as I penned this tome, so there's a chance that it will be in the shops by the time you read this. If not ring up Activision and ask why not.

Equally, *Galaxy Force* was scheduled for mid-December, but might hit a snag. What you definitely won't see until late on this year are the three big coin-op licences that Activision has bagged. *Dragon's Breed* from IREM is by the same team who wrote the blockbuster *R-Type*, and continues the action. *Ninja Spirit* is also from IREM, and can be expected to chop and kick its way into the shops for Easter.

Atomic Robokid is a mega shoot 'em up from the Jap coin-op outfit UPL, and is probably a Christmas release.



Fighter Bomber.

Audiogenic

That old dog Emlyn Hughes has let Audiogenic abuse his name for the sake of cash again, with the release of *Emlyn Hughes Arcade Quiz* in January/February. All the excitement of pub quiz games can be yours (except that you can't win any money of course), with added arcade action to wake you up between questions.

Sounds great doesn't it. Never mind, *Wreckers* is a spring release that sports isometric 3-D screens in a space station. Written by Denton Designs, it's an arcade adventure wherein you fend off an invasion of slime. Could be worth waiting for.

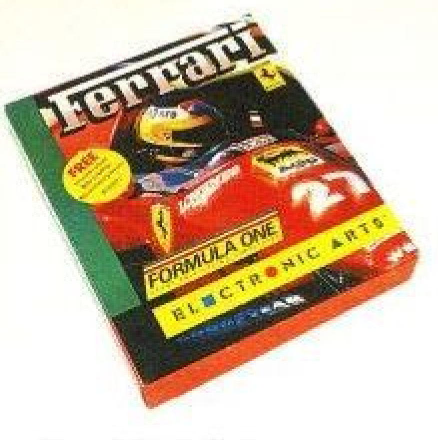
Now then, what is the best footy game on the CPC? *Emlyn Hughes International Soccer* of course. Until we see what *Kick Off* looks like on the CPC anyway. With Anco racing to produce *Player Manager*, can Audiogenic beat it by getting *Super League Manager* out first? Not only do you manage a team in the time honoured tradition, but you can link up with *International Soccer* to play out the matches arcade style. Audiogenic is hoping to have it out in the Spring.

CDS

Only one CPC title pending from CDS at the moment, though conversions and budget releases are expected as the year progresses. The title to be definitely released is *European Soccer League*, which gives you the chance to do what the English clubs can't at the moment: play foreigners. Due to be released late January.

CRL

The main thrust of CRL's releases will be 16-bit, but there are going to be conversions to the CPC. A collection for Christmas and



Ferrari Formula 1.

the New Year is *Burning Rubber*, which consists of *Formula One*, *Endurance* and *Juggernaut*. All good fun for Yorkie fans. On the other hand you could go on a pixie quest in *Tower of Light*, which is due for release in January. This one is all about defeating the Dark Lord, by finding the Crown of Endil and slapping it onto some sucker's head.

Domark

American Football with robots? It might sound like a dreadful Japanese cartoon, but there is actually an arcade game called *Cyberball* that is just that, and Domark is going to bring you the CPC version of it. Timed to coincide with the Superbowl, which will give Domark's production team a hard time if nothing else, the game boasts over 100 offensive and defensive plays.

If that sounds strange, then *Escape From the Planet of the Robot Monsters* is distinctly off the beaten banana. This is a Tengen coin-op where you join the heroes on the surface of Planet X, where a rescue mission is in progress. In true comic book style an army of Reptilons are forcing the humans stationed there to create an army of evil robots whose mission is the very destruction of the planet Earth! It sounds like a larf, but we'll probably have done the job for them by the next century anyway. The release date on this one is early 1990. Which tells you not a lot I know, but Domark obviously hadn't even started programming, never mind having an idea when they were going to finish.

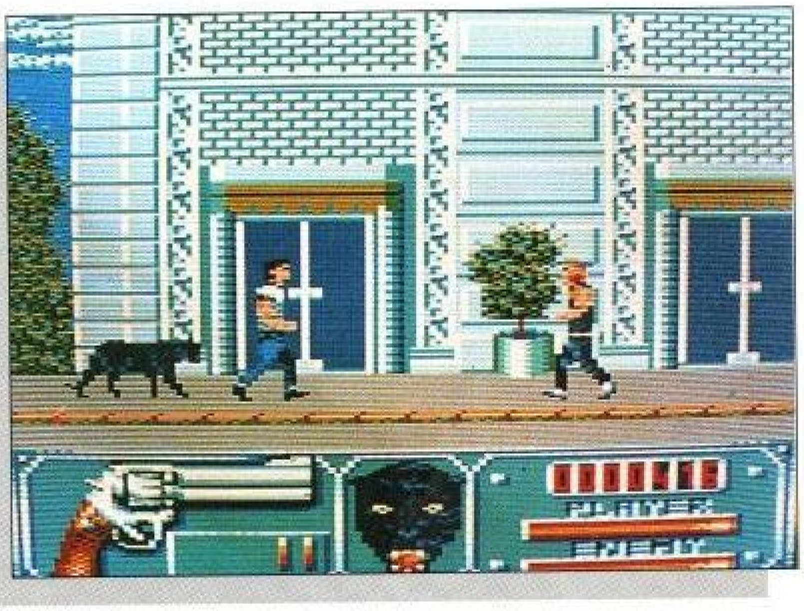
Electronic Arts

Not a lot is forthcoming from the UK offspring of one of the world's largest entertainment software companies. Just *Ferrari Formula 1*, to add to the seemingly huge number of racing games already on the market.

Entertainment International

From the Titus people you can look forward to the world's first ray traced arcade game, *Dark Century*. Well, their words not mine, since someone at Ent Int seems to have forgotten about Maelstrom's *Whirlygig*. PR flannel aside, Dark Century features six fully programmable armoured assault vehicles, a one or simultaneous two player mode, and 3D ray traced graphics.

For fans of beat 'em ups, haven't you had enough yet?



Wild Streets.

No? You'll probably like *Wild Streets* then. This is you versus the Mafia, which sounds a bit one-sided no matter how good you are with a joystick. Stomp down the streets of Long Island, over 30 levels of action, fighting big wobbly sprites, and admiring the black panther that comes to your help when the going gets tough. Reality? Naahhh.

Although the powers that be over in the French HQ of Titus are still pondering it, there's a pretty good chance that the go ahead will be given to *Crazy Cars III*, which if produced will be shipped in September. On the Empire label you can look forward to the conversion of the book *King Yankee*, which sounds more like a Microprose game, but what do I know. Actually an enormous amount since I have a brain the size of a very large galaxy, but that isn't the point.

Another game that is still being mooted is called *Pipeworks*, but everyone at Ent Int seems to be confused about that one at the moment.

Grandslam

Two big names are in the Grandslam chrysalis at the moment, but will they emerge as beautiful butterflies, or dingy moths? Watch out for *Space Harrier II* and *Scramble Spirits* for some (hopefully) nose biting arcade excitement.

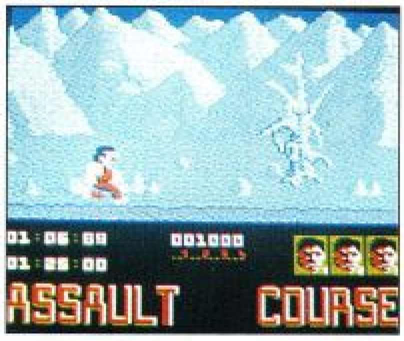
Sometime in '90 you will have the opportunity to embark on a voyage of discovery with the *Seven Gates of Jambala*. This is believe it or not, a scrolling (vertical and horizontal) arcade game with you trying to escape from a cave system while fighting off very large animated monsters.

Grandslam was also hoping to have its own footy game in the shops before Christmas, but if it didn't make it, you can expect to see *Liverpool – The Game* sometime soon.

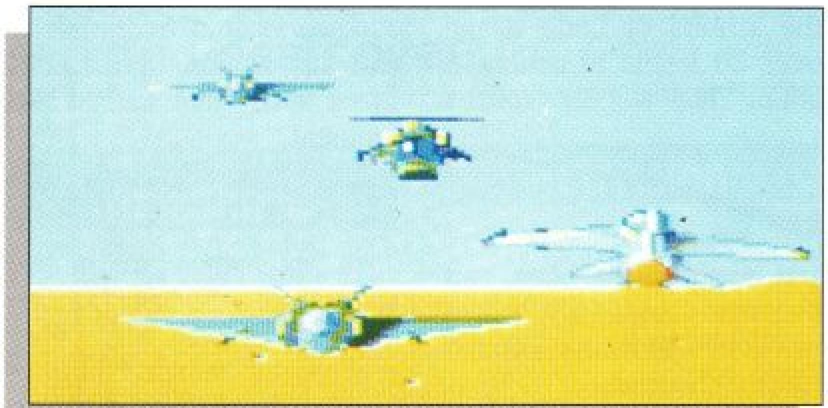
Interceptor

You're in the army now, nah-na-nah, you're in the army now. January sees the launch of *Assault Course*, which is of course a sociopolitical treatise on toxocaria-





sis in the community. Or is it a horizontally scrolling army assault course with large graphics? You never can tell. Further up the line in February there's *MiG Busters*, which is a fly and die, slightly Afterburner perspective, blaster; *US Stunt Driver Challenge*, which is a horizontally scrolling road race with ramps and obstacles; and then there's yet another footy management game, *Superleague Soccer Manager*. I wonder if this one is going to be any good because every single one from last year was complete rubbish. It'll cost you £8.99 to find out, unless you read the review in ACU first of course.



MiG Busters.

Microprose

Who would have thought that Microprose, a company renowned for taking forever to carefully sculpt its games before deigning to release them to the unwashed masses, would have a release scheduled comparable to Ocean or US Gold? Not me for one. Not until Microprose bought out Telecomsoft, acquiring three labels in the process, just as it launched two new ones of its own. Anyway, look forward to *Rat Pack*, a sequel to *Airborne Ranger* which features four programmable soldiers – available in March or April. Then there's *Starlord*, a space epic from Mike Singleton, based on his PBM game, due for release in May, and *Oriental Games*, featuring lots of slanty eyed belly wrestling.

Thanks to the great success of Geoff Crammond's *Stunt Car* on other formats, the 'prose boys are considering releasing it for the Amstrad as well. Those titles aside, Microprose promise lots of deep strategy games for the mid to end of the year. These will be Microprose games as opposed to the style of game released on the other labels.

Mirrorsoft

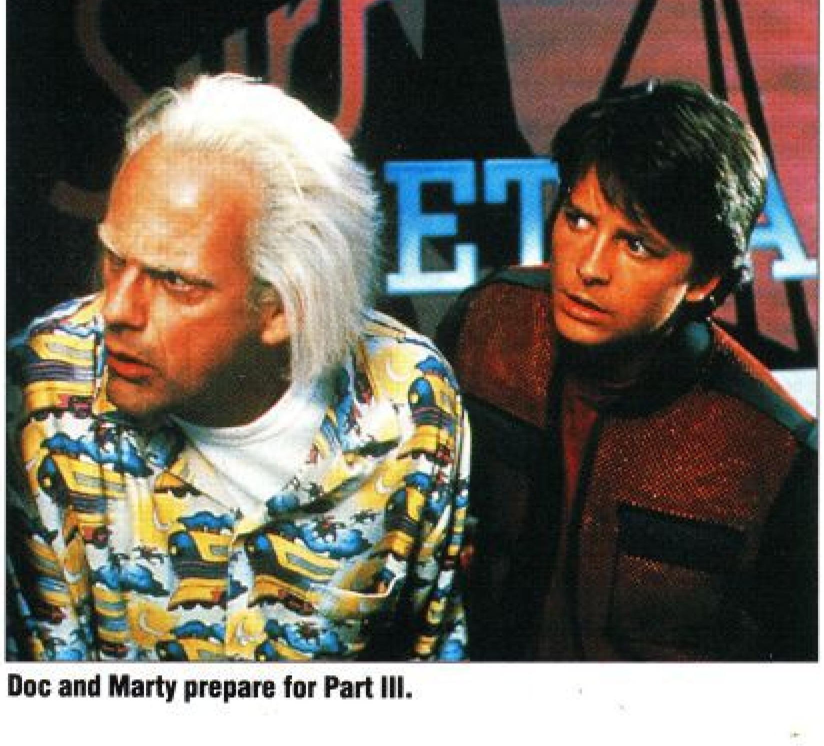
The big name release from Mirrorsoft will be *Back to the Future II*, available early 1990. The game will follow the plot of the film as Marty travels into the future to 2015 to influence the lives of his children, but unwittingly gives Bif the opportunity to travel back to 1955 to hand over an almanac containing all the sports results of the 20th century. Using this Bif backs all the winners and becomes fabulously rich, leaving Marty the job of travelling back through time again to 1955 to set history to rights.



Back to the Future II.

Hopefully the game won't be as confusing as it all sounds. There are expected to be digitised pics from the film, a diagonally scrolling playing area and the emphasis on arcade action. Unbeknownst to virtually everyone, Mirrorsoft also has the licence to *Back to the Future III*, which was shot at the same time as BTF II. The plot of this one takes Marty even further back in time, to the wild west of the 19th century, and a run in with the local cowboy population. The game of that film should be released at the same time that the film goes on general release.

In the very early part of the year Mirrorsoft was also promising to release a 25 level expansion disc for *Bloodwych*, providing more monsters, more magic and more mayhem.



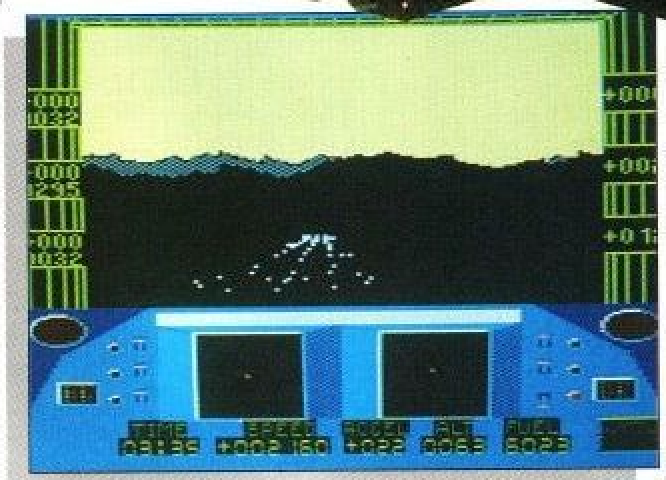
Doc and Marty prepare for Part III.

Ocean

Despite the Ocean PR person commenting, 'Er I don't know what we're doing,' the swift application of thumb screws revealed that the game-of-the-film *Nightbreed*, penned by Clive Barker, will be released at Easter in conjunction with the film. Also, from the authors of *Carrier Command* (Realtime Software), comes *Battle Command*, which will be the same sort of 3-D polygon graphics, but on land. The programmers were at pains to point out that it was not a sequel to *Carrier Command*. So why does this game have the word Command in its title as well, I asked Er, um, er, they replied.

Virgin Mastertronic

Loads of stuff coming for 1990 including *Fighting Warrior*, more ninja antics on a budget label; *Enterprise; Psycho Hopper*; the long awaited *Dan Dare III*; the game of Monty Python, now sadly missing Graham Chapman; more budget action in *Micro Mouse*; yet more ninja chop suey in *Double Dragon II* and *New York Warriors; War in Middle Earth*, the final product in the Tolkien Trilogy; a couple of pixie adventure games in *Demon's Tomb* and *Grimblood*; and finally the umpteenth game from the 2000 AD comics, *Judge Dread*, which is more significant because Arnie Schwarzenegger is playing Dread in a film to be released this year.



Enterprise.

US Gold

The Birmingham mafia, as the company is fondly known to its rivals, has an unearthly wodge of software, from a variety of licencees.

Track Attack from Loriciels was supposed to be out last October, but has found itself miles behind, so you should be seeing it around now. For those who enjoyed an ACU cover game from last year, *Skweek*, there's good news in that the imaginatively titled *Skweek II* is being released aroundabout now, hopefully without any naughty words in it this time.



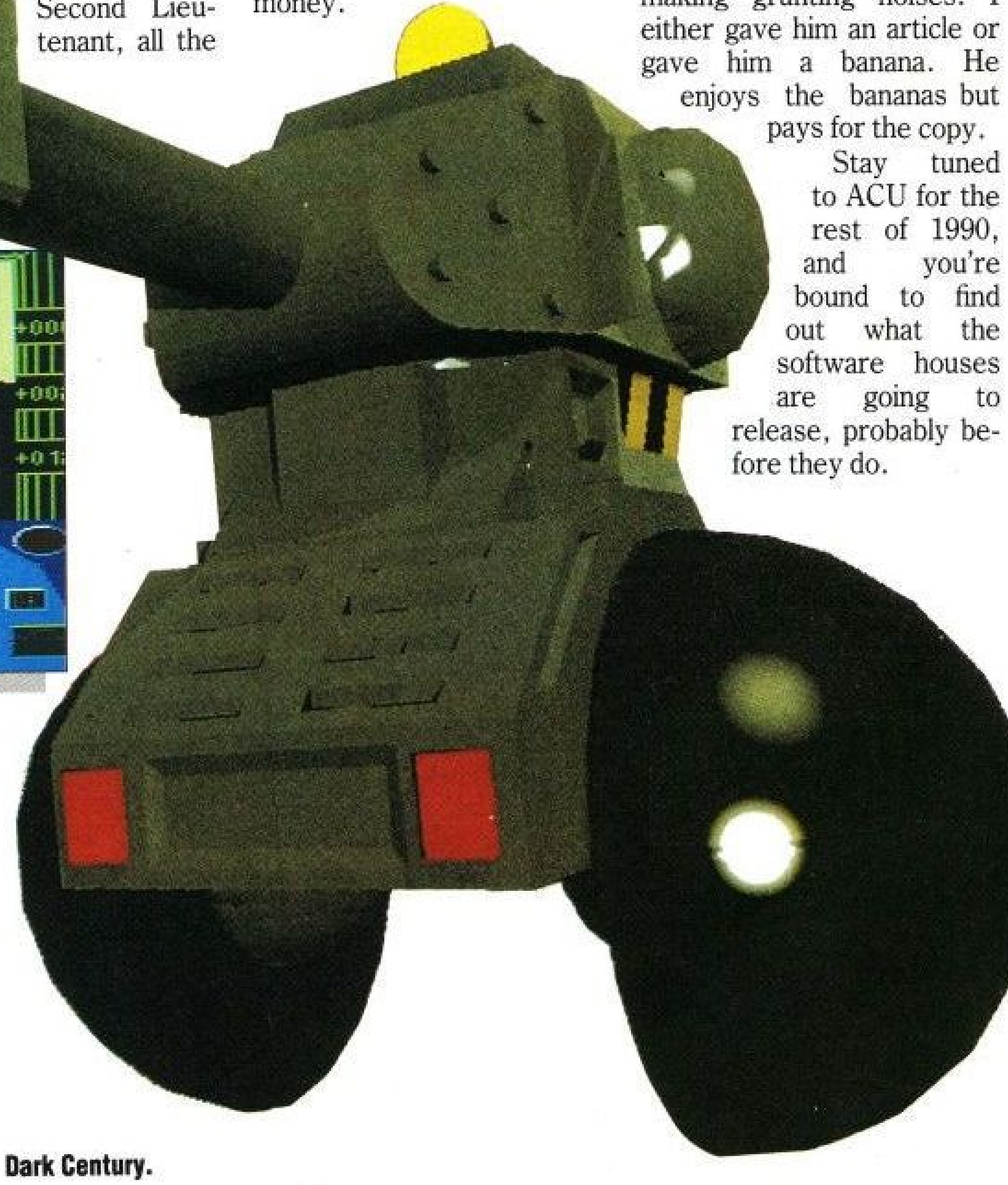
Psycho Warrior.

Meanwhile, Accolade's *Heavy Metal* could just find itself competing against *Track Attack*, as you take command of an M1 A1 Abrams tank. With war room planning, careful strategy and the capture of an enemy HQ without having your forces decimated, you can find yourself being promoted from Second Lieutenant, all the way up to Field Commander. AD&D products to look out for from US Gold include *Dragons of Flame, Champions of Krynn* and *War of the Lance*. Strange considering that Heroes of the Lance wasn't released on the CPC, yet these games follow on from it. Then again, since Heroes was a pile of smelly stuff you've probably saved some money.

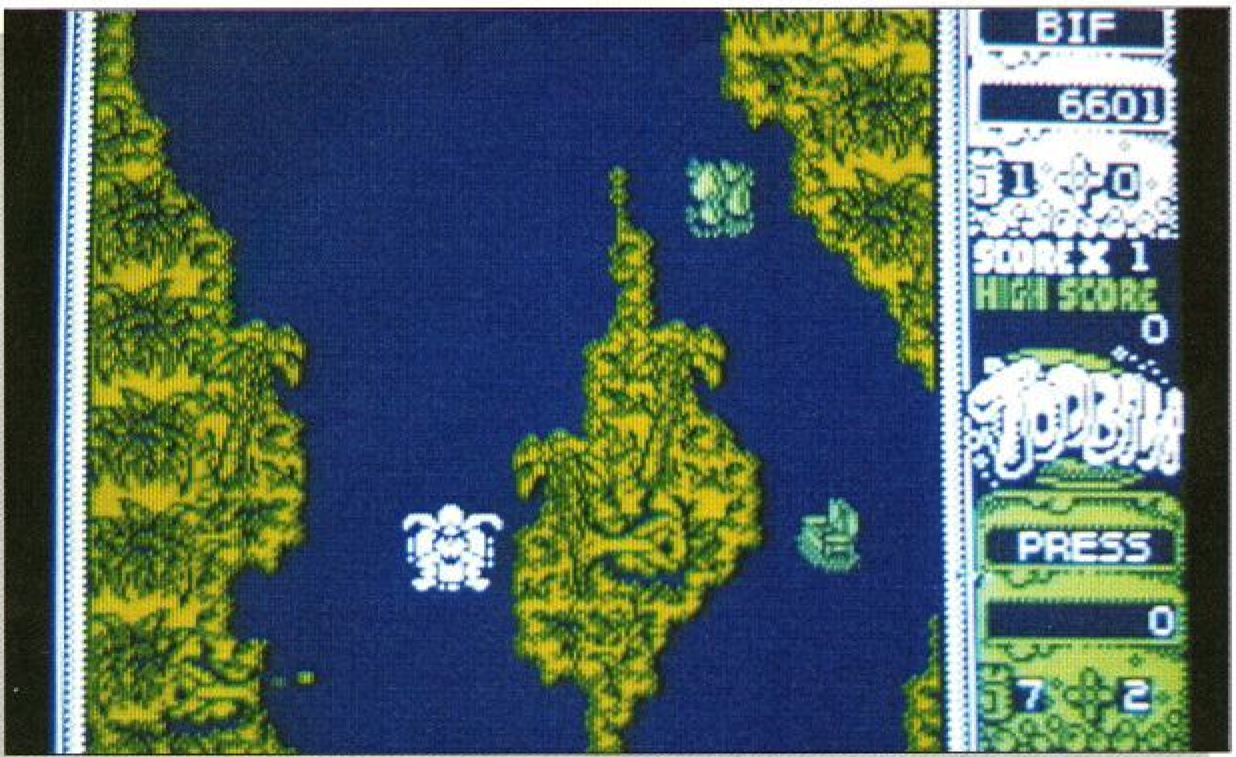
And finally, a Capcom arcade conversion called *Black Tiger*, should be in the shops by Easter.

While this dossier isn't a comprehensive guide to absolutely everything that's going to come out in 1990, it does give you a good idea, and half of the software people don't know what they're doing yet anyway. Besides which, Guy (the Ed) was making grunting noises. I either gave him an article or gave him a banana. He enjoys the bananas but pays for the copy.

Stay tuned to ACU for the rest of 1990, and you're bound to find out what the software houses are going to release, probably before they do.



Dark Century.



Toobin'

Paddle down the Amazon on an inflated innertube, but be sure to avoid the crocs, punks, swamp monsters and kamikazi penguins.



How often have you sat in your bath and dreamed of paddling through rocks and rapids in a large inner-tube? Many a time I have sat staring at the soap and imagining it was a crocodile and that I was desperately paddling away across the rapids. The latest coin-op conversion from Tengen offers the prospective rider of the waves a chance to fulfil these dreams and fight off the terrors of some of the worst rivers in and out of this world.

Toobin is a game designed to test the nerve of the best toobers around. Floating and paddling through treacherous waters, it is your job to collect the tin cans that litter the river as ammunition against the alligators and deadly weeds that get in your way. Just when you think it all sounds a little easy, punks, fly fishermen, swamp monsters and kamikaze penguins line the banks to give you jip and burst your tube.

While you are wobbling down the Amazon, shades on and hair slicked, manoeuvring through gates to pile on the big points, you can collect letters which spell the word Toobin. Throw a can at a weedy twig-like thing and it may release a letter which, just to make things a little irksome, bounces around the river until you catch it. The floating gates have scores on them which are halved if you hit a supporting post. A bit unfair you may think? But that's life, you lucky people.

Toobin is really a racing game for two players. Biff and Jet, the resident river cats represent you (and a friend) in your bid to become a champion toober around the world's most famous rivers, and if you are good enough, Mars too! Controls of the CPC are usually a little difficult for two players but with Toobin the problem is easily mastered as the controls are not difficult to comprehend. I actually found the keyboard controls more responsive to the desired moves of my gallant toober. The scrolling of the scene down the screen is fairly good as are the graphics, although at times it is a little difficult to judge safe distances from the prickly weedy twig-like things, floating logs and sturdy rocks. Nevertheless, after a few games, distances can be accounted for and become a part of the overall toobing proficiency.

Each river carries its own individual backdrop and obstacles which for the CPC are adequately sketched. The Amazon, Yukon, Nile, Rio Grande and Colorado all feature in this jaunting adventure in a giant rubber ring. I did not manage to see the Martian river system, although Domark tell me that it does exist. If you manage to witness the hurlyburly of space-bound waters I would be interested to know what they're like. Let us hope that Toobing on Mars ends with a party like Toobing on Earth.

Toobin is a simple game to play and can become addictive, as the coin-op version has already proved. Certain members of the ACU team have taken to Toobing like a goose to a duvet which is a sign that the watery, air-filled wobblers are a bit of a hit.

Marc Jones

ROUND-UP			
NAME	Toobin		
SUPPLIER	Domark	PRICE	£14.99 (disc)
65%	50%	80%	78%
GRAFFIX	SONIX	PLAYABILITY	OVERALL

Ghostbusters II

The spooks are on the run as the 'busters turn out once again to save New York from a slimy fate.



They're coming to save the world again! Who? What? Where? But they were only here a few months ago under the guise of the Real Ghostbusters, so what's this, Ghostbusters II – The Movie?

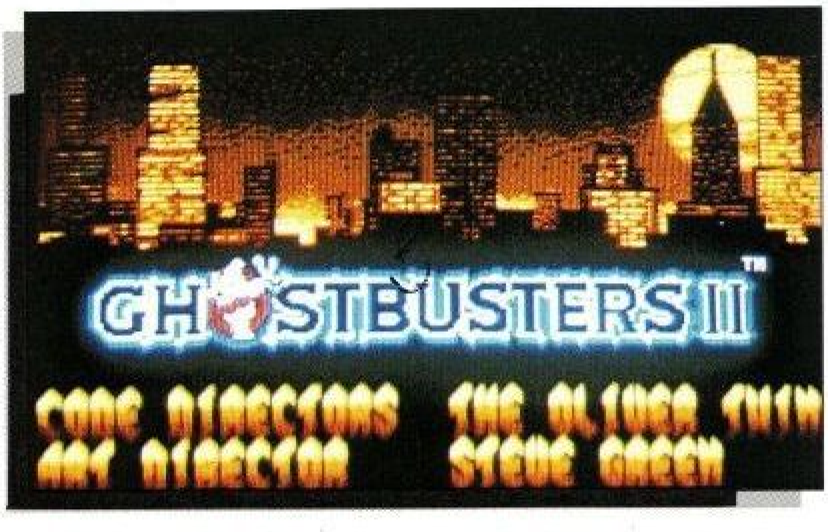
No, it's just plain old Ghostbusters II, and Activision are challenging for the No 1 position again. But will it steal the coveted place?

Five years on from the original block busting box office sellout epic, Columbia Pictures returns with Ghostbusters II. The film opened in London's West-End on December 1, last year. The game was released in time for Christmas and who ya gotta thank? Activision.

Luckily, the game is much more enjoyable than their last effort, The Real Ghostbusters. Ghostbusters II has the edge on the previous cartoon spin-off in many ways. Firstly, it's playable and does not render you unconscious two minutes into the game.

Ghostbusters II contains three sequences which are largely based on the film. The first level sees your heroic 'buster being winched down an air shaft in the middle of a New York Street. But this is no ordinary manhole. Only a few feet from the top you begin to encounter ghosts and ghouls, large green hands that grab you and pull you in and a whole manner of other monstrosities which you do not want to touch. Your Ghostbuster can be hauled up and down and can swing from left to right in the shaft to avoid ghosts and to collect bottles of elixir which lie on ledges on the way down.

Once you have reached the bottom and are dangling above the murky green sewage, you must collect a slime sample and return to the top. Too much contact with the ghostly creatures and you lose courage and eventually fall from the rope, scared stiff. The rope must also be watched as the phantom green meanies will cut at it until it's too frail to hold you.



The second scene sees the Statue of Liberty off for a walk down the Broadway. Well, it's been on the island for years and wanted to stretch it's legs. The four heroes are sitting in the crown and have control of the mighty statues torch which must be used to launch balls of fire as the supernatural shapes attack the massive figure. The final scene, should you reach it, finds your busting team at the Museum of Art and ready to absail down the side of the building. You must rescue baby Oscar from the clutches of Vigo the Carpathian and then use your latest busting kit to send Vigo to oblivion.

Ghostbusters II is no work of art. The graphics are quite good and the sound quite acceptable. Play-wise, the game gets a bit tedious after a while as it's slightly too difficult, and making your way safely to the top of that shaft is no easy process.

Ghostbusters II the game is unlikely to make as much of an impact as the film. I know which I would rather see. I'm off to Leicester Square.

Andrew Banner

ROUND-UP

NAME	Ghostbusters II		
SUPPLIER	Activision	PRICE	£9.99
82%	76%	72%	80%
GRAFFIX	SONIX	PLAYABILITY	OVERALL



Hard Drivin'

Yet another game for driving freaks. Don't switch off yet, this one's the pick of the bunch.

And so the season of the driving game reaches its fume filled climax, as the three main contenders, *Continental Circus, Power Drift* and *Hard Drivin'* come around the final bend and accelerate towards the line. Who will be the winner?

Hard Drivin' is the latest release of the triumvirate, and appears to be racing down an entirely different track altogether. Instead of 3-D sprites, (aka blob city), this game favours filled polygons, (aka *Carrier Command* or *Starglider 2*), and a solid 3-D world. Far in the distance you can see some of the obstacles on the stunt track, and other cars bravely trying to navigate them. This is more a simulation than a racing game, like the other two, as it features revs as well as speed, with you setting the revs and the terrain modifying them into your actual speed.

There are two circuits to try out: the speed track and the stunt track. Formula 4 drivers like you should stick to the speed track until you get the hang of the controls.

Complete the circuit in a regulated time and you get a bonus time, to try and improve your performance some more. And watch out for the drivers on the other side of the road as well. Yes, despite these being self contained tracks, some of the other drivers insist on driving the wrong way round. It's the truck drivers you've got to watch out for. They're too busy eyeing up the women drivers and chewing Yorkie bars to notice where they are going.

All this is but a prelude to the horrors of the stunt track.

The first horror on the landscape to traverse is the 45 degree drop off the cliff. A farmhouse and a cow stand peacefully watching drivers hurtle up to the precipice. If your direction and speed are right then you drop down the ramp to the ground below. Get the line wrong and you miss the ramp altogether, leading to a viewing on the instant replay.

From then on there's the giant elevated bend, the underpass, the heart stopping bridge and the nail biting loop the loop. On that latter obstacle it's hard enough just to stay in the middle and not sail out for a brief airborne sojourn. Just pray that no-one is coming round the loop from the other side.

The graphics of the 3-D world are blue and black, with a multicolour options menu and map, and are animated very nicely indeed. You can also feel the impact when you sail off the cliff and miss the ramp. Tremendous fun, fairly difficult, and there's the Phantom Photon challenge for anyone who sets a top score.

Hard Drivin' offers a more aesthetic driving experience than the other two games, is visually stunning, and probably ties with Power Drift for the title of Best Racing Game.

Mark Luckham



ROUND-UP

NAME	Hard Drivin'		
SUPPLIER	Domark	PRICE	£9.99
82%	70%	87%	85%
GRAFFIX	SONIX	PLAYABILITY	OVERALL

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Back to school

Auntie has a nice surprise – a machine code tutorial in two parts for those of you who still don't know your Z-80s from your Data Bases.



"Oh no," you think. "Not another machine code tutorial . . ." Yes, I am afraid it is. However I am determined that this one will be the definitive one. Wherever men may revel and quaff they will speak of 'Machine Code – The Tutorial' and remember that this is where they learned machine code. Future generations will speak with awe about the verbose examples, the eloquent text and the dreadful puns. Or then again, perhaps they will not.

Let us lay down some ground rules. Firstly, the old 'Buy an Assembler' story. Wait and see if you want to learn machine code before rushing out and spending lots of money. If, though, you ever find yourself spending more than five minutes converting codes yourself then buy one, and make sure it is MAXAM, preferably on ROM.

Secondly, there are the various reasons for machine code. Some will say that the great speed of code is the reason to learn; some will say it is the extra flexibility and control that Z80 code allows. They are wrong. You will only learn machine code if you want to. You must enjoy it. Programming is a hobby simply because it is an intellectual challenge. Some people will program for the same reason that others play chess: it is a test of brainpower. If you do not enjoy coding you will not find it fulfilling, and you will not do it, for all the extra speed and control will mean nothing.

Chapter One: Machine Code – What is it? As you may be aware, the heart of the Amstrad CPC computer is a microprocessor called the Z80. The microprocessor is small (hence the micro bit) and processes (hence the processor bit) information. The Z80 was originally designed by the Zilog Corporation, who based it upon the 8080 processor designed by Intel. (This resulted in various court actions, but everyone's lawyers are one big happy family now.) It has become arguably the most popular processor ever and is used in many different computers, ranging from the wonderfully named Superbrains to the ill-fated Jupiter Ace. Although the newer generation of computers are turning to new and more powerful processors such as the 68000 or 80086 families, the Z80 will live on in folk legend for many years to come.

Any computer using a Z80 and a disc drive also has the option of using a standard operating system called CP/M, which is another reason for its continued existence.

Your Amstrad comes complete with the programming language Basic 'built-in'. Basic was chosen because it is the nearest thing to a standard language and is probably the easiest to learn and use. Part of the Basic system is an 'interpreter' which converts the program into machine code for the Z80 to run.

If you wish, you can bypass Basic and instead talk directly to the Z80, with an immense increase in speed and complexity. To do this you must use the list of commands that the Z80 speaks (the 'instruction set' and none other). Using a Basic instruction such as 'PRINT' or 'PLOT' is not possible using a single Z80 instruction, although, as we shall see later, careful combinations of instructions will enable us to do anything that is possible

from Basic, and much more.

The only difference is that our machine code equivalent will be faster, more flexible and will take up less space in memory. It will also crash quite a lot.

Chapter Two: A Brief Overview of Computer Systems – meet Mr Memory. In order to understand machine code, we must explore the underlying hardware of our computer system.

The Z80 microprocessor is linked to the memory by two groups of connections: the Data Bus and the Address Bus. The memory consists of a number of 'cells' each of which contains a number in the range from 0 to 255: a BYTE of memory. To enable each memory cell to be specified uniquely, it is given an 'Address', in the form of another number, this one in the range from 0 to 65535.

Memory comes in two flavours: Ramdom Access Memory (RAM) and Read Only Memory (ROM). 'Random Access' simply means any part of the memory can be read at any time, in the same way that any track of a record can be played at any time just by moving the stylus. Compare this with a music cassette: here you must fast forward and rewind through all the other music before you get to the really good track you want, the one with that fabulous guitar intro.

RAM is a misleading name: all modern memory (including ROM) is Randomly Accessed. A better name would be 'Read and Write Memory', but this does not sound as good so it never caught on. RAM can be written to and read from by the Z80 but when the computer is switched off, the contents of the memory is lost. Thus you must make a copy of any data stored in RAM on a more permanent media, such as tape or floppy disc, before switching off.

In order to write to memory, the address of the memory call in question is placed on the Address Bus and the new value of the cell is placed on the Data Bus. Then a special 'WRITE' control signal is sent to the memory and the memory says "Hey! That's my cue to remember something! What's this number on the Data Bus? Okay, got it. Now where am I to store it? Ah, thank you, Mr Address Bus, right here. Okey-doke."

Of course, the above is slightly inaccurate. The memory cannot really speak, because memory circuits are inanimate objects. Perhaps on a different astral plane to the one on which we live, memory circuits do talk to one another and have really exciting times discussing access times and the like, but that sort of discussion is really left to the type of person who likes vegetarian cigarettes and Pink Floyd. If it helps you visualise what is going on, though, fine.

```
          --- address bus --------->

Z80                                          MEMORY

        <------ data bus --------->
```

Magic bus.

When reading memory, the address again is put on the Address Bus, but this time a 'READ' control signal is sent to the memory. Once it gets this signal, the memory puts the contents of the memory cell in question on the Data Bus where it is received by the Z80.

Read Only Memory cannot be written to; it is supplied with its contents fixed and permanently in place. Perhaps the name gave this little surprise away! However Read Only Memory does have one thing going for it, and that is that it will retain data even when no power is supplied.

Write Only Memory is the very latest development from a small company called 'Electronic Parts' from Northern Ireland. They claim 100 per cent reliability from these devices, which will operate at practically no current and at very high access times. It remains to be seen if they will be accepted into the computer industry at large. Personally, I have no doubts, although if you wish to try the memories for yourself, the address of the company is given in the appendices.

As mentioned before, memory stores a collection of bytes which are just numbers from 0 to 255. Each instruction supported by the Z80 is given a code number in this range, and so a machine code program consists of nothing more than a list of numbers ranging from 0 to 255.

It is the way in which the Z80 treats each as an instruction that makes the data appear as a program. Of course, we will also want our program to be able to store and retrieve numbers (for ages, scores, dates etc.), so sometimes memory contains a program, and sometimes it contains data. This dual use of memory was a brilliant innovation, and has led to some of the most spectacular computer hang-ups in history.

Chapter Three: Programmers Start Here. The Z80 has a set of internal registers as letters, such as A, B, C, D, E, F, H and L. Then can be thought of as variables that can store byte values: numbers in the range 0 to 255. Their semi-alphabetical order is of no real significance, and is only there because those psychotically deranged people at Zilog wanted to confuse you.

Sometimes we may want to increase this single byte range and to this end some Z80 instructions pair two registers together, but more of this exciting concept later.

To enter a machine code program we must first decide where to place it, i.e. at what address in the computer memory. The address &8000 is as good a place as any, because it points to a nice big section of RAM just waiting to be used. (The use of the '&' symbol means that the number which follows is in base 16, or Hexadecimal. Check to see if your pocket calculator can change between decimal and 'hex'. The use of 'hex' is a universally accepted way of expressing numbers in computer terminology and it is vitally important that you understand it, or at least are willing to give it a go, see another appendix for details. &8000 is decimal in 32768.)

Once the location is decided, we insert our coded instructions into the memory locations. In Basic, the command 'POKE' will do this for us. For example, 'POKE &8000,99' will place the decimal value '99' into hex address &8000; 'PEEK' will do the opposite to 'POKE' and return the value at the supplied address.

● Continued next month. Bye!

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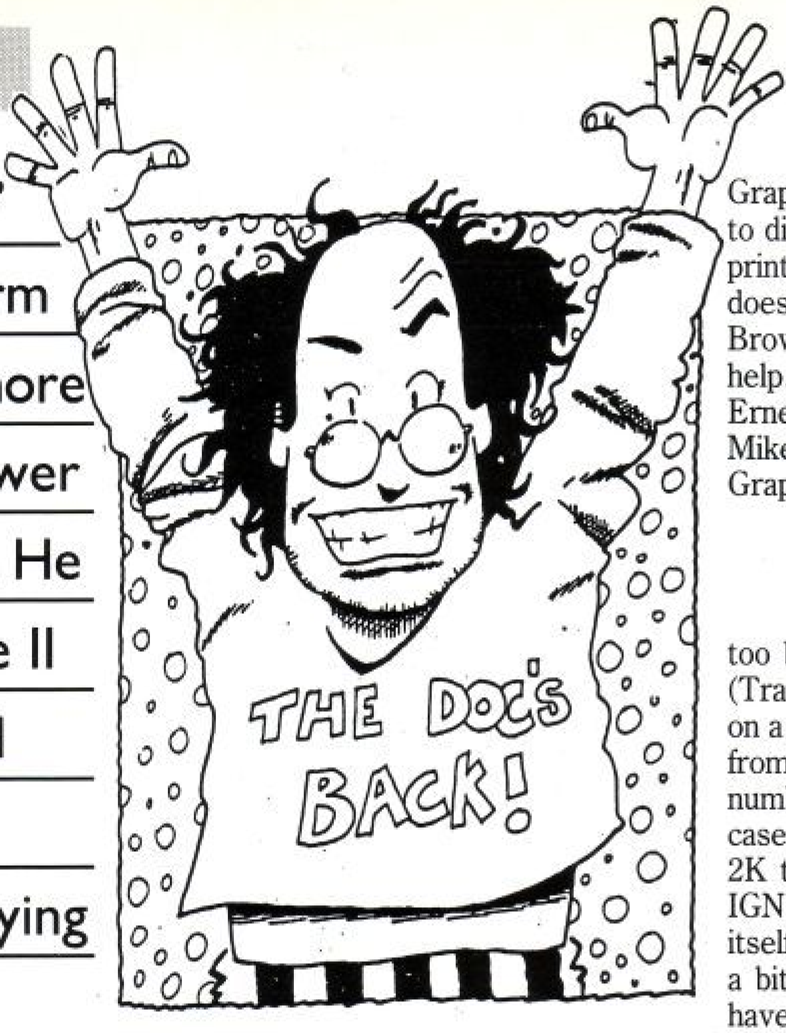
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Dr David 'Lazarus' Dorn is on top form this month with more wise words in answer to your problems. He revisits Mini Office II and DR Graph and discusses word processors and buying a mouse.



A hero returns

As you will no doubt have seen, Applications Advice did not make it last month; this was because of a rather severe illness on my behalf. I think it had something to do with being given the honorary doctorate by the ACU team the month before, coupled with Adrian Pumphrey making that wax doll of me and sticking RS232 cables into it.

Thus, we have rather a fat bag this month, and a variety of topics to be covered. So many, in fact, that yet again I am holding the colour dumping stuff over for at least another month.

Apologies to all of you who have been waiting patiently for the 256 colour capability for your LC-10s but, as a very wise man once said, everything comes to him who waits. Be patient a little longer and all will be revealed.

Right then, to the queries and answers. As usual, we will go through the 'you've got it wrong again, Dorn' post first, and then get into the new queries!

Barring bars?

Firstly the bar commands in *Mini Office II*. Many of you wrote to tell me that page six of the manual contained details of their operation, something that I had overlooked in previous columns. And, of course, Maurice McKinney and A. N. Gry (who does he think he is kidding?) of Sheffield were right. So, just to put the record straight, and with due apologies to Database, page six of the Mini Office II manual does indeed mention the ERA command. Sorry.

Researched

I have been overwhelmed by the response to my plea for help a few issues ago regarding problems with *DR Graph*. Ernest Munroe, who was one of the progenitors of the discussion, has sent me a follow-up letter, and wishes to thank all our correspondents for their help, particularly John Hudson.

Now Ernest is asking for a little more help. Ernest writes "I would appreciate some comments on the Multiple Graph facility (item 7 on the main menu). Now that I have regained the recall facility, I can display up to four graphs on my screen, but when I try to print them out, I get the message (after much whirring of discs) 'Disc write error, Temporary file-:GSXTMP' and I am back outside the program with an A:prompt. Any help that your correspondents can provide will be most welcome."

Hmm. It rather looks as though Graph needs to write a temporary file to disc in order to give it room to load printer drivers etc. Maybe the disc just does not have the room on it? Mike Brown and Joe Collins may be able to help. Both have written in response to Ernest's earlier letter. We will handle Mike's letter first. He says, "Both (DR Graph and DR Draw) programs are far too big to fit into the Amstrad's TPA (Transient Program Area), or indeed on a 178k disc, and so are put together from a shell program and a large number of overlays – fifteen in the case of DR Graph, varying in size from 2K to 14K – and other bits like ASSIGN.SYS, the GSX drivers and GSX itself. Running DR Graph is therefore a bit of a juggling act. The trick is to have on the A: drive all the overlays that the program expects to find there, and to have all the rest on the B: drive. The shell program is called GRAPH.COM.

"Giving the device driver names listed in ASSIGN.SYS, the prefix B: enables the drivers themselves to be put on the B: drive. All graphs will have to be loaded and saved from and to B: by using the prefix B: on the filename (as we have already seen), but even then, space is very limited.

"If an –00K second drive or 256k silicon disc is available, all necessary files can be put on one disc (the shell program to use is called GRAPH2DR.COM – confusing, I know, but the 2DR bit refers to the 2 drive PCW, which can use its 720k second drive to hold all the files). The silicon disc is particularly nice – quiet and fast – except that it is not compatible with the —bit printer port! I am still working on this one."

Mike has also offered to correspond with Ernest personally to help him out with his problems. That is a wonderfully kind offer, but, if I may, I would like to ask you if you would correspond through this column? That way, many more people will benefit from any advice that is given, which is, after all, what Applications Advice is all about. So, Mike needs to know which files you have on which disc?

I decided to phone Mr Munroe, and here is the information

DRIVE A:
- ASSIGN.SYS
- DDFXHR8.PRL
- DDMODE2.PRL
- GRAPH.COM
- GRAPH1.OVL

GRAPH2.OVL
GRAPH3.OVL
GRAPH4.OVL
GRAPH5.OVL
GRAPH6.OVL
GRAPH7.OVL
GRAPH8.OVL
GRAPH2DR.COM
GRAPHY.MNU
GRAPHZ.TBL
GSX.SYS
PIP.COM

DRIVE B
GRAPH9.OVL
GRAPHA.OVL
GRAPHB.OVL
GRAPHC.OVL
GRAPHD.OVL
Roughly 126k free on disc b:

The ball is now very firmly in Mike's court, and I thank him in advance for his efforts!

Now to Joe Collins, who hails from my part of the world, up here in the beautiful North East of England – a little place called Marske (pronounced Mask), Joe has basically gone through how he set up his copy of DR Graph, covering ground we have already considered. However, he has included one very interesting snippet.

It seems that ASSIGN.SYS on his version contains the device driver DDFXLR7, which is set to use only 7 bits for printing, and which, he thinks, clashes with an --bit printer port.

As Mr Munroe is using a different device driver in his ASSIGN.SYS, I do not think he will experience any problems of that kind. It is an --bit driver, but thanks for the tip anyway, Joe.

No doubt we will be hearing more about DR Graph in the future. For the present, I have had another offering from John R. Hudson, who has given valuable help in the past. (This is beginning to sound like the Hairy Hacker's column, with regulars writing in, and long may the trend persist)!

This time, John is responding to the letters I have received over the past few months about *Mini Office II*. Before we get into this one, I had better make my position clear on that particular suite of programs. I know that I often knock MOII, but in truth, when its price is taken into consideration, it is not a bad buy. My overriding feeling is that it is great for the casual big three user (WP/spreadsheet/database), but is beaten into a cocked hat by standalone programs. So there you have it. I do not really dislike it!

Back to John Hudson. He tells me that users of Supercalc2 can transfer graphics data to MOII, as MOII uses comma delimited values to store graphics data. This, as Jimmy Young would say, is what you do.

"Define a range in an SC2 spreadsheet two columns wide by twenty rows long. Enter the values in the left-hand column, and the associated labels in the right-hand column (note that this is the opposite way round to the way that data is displayed within MOII). Fill any unneeded cells in the left-hand column with zeros, so that there are twenty numeric values in the left-hand column. You can leave unneeded cells in the labels column blank.

"Use the SC2/S(ave) <Filename> P(art) command to save just these forty cells. When you quit SC2, turn over the disc, and load SDI; select option A and enter the <filename>; press <RETURN> twice, and SDI will create a comma delimited file with the same <filename>.

"Leave CP/M and load the MOII graphics module; select load data and, when prompted for a filename, enter <filename>. CSV. As you can load three separate data files, each of up to twenty values and their associated labels, you can display up to sixty values in MOII graphs".

That is very useful, John, as spreadsheet users who wish to graph already existing ranges need only create a forty cell block and reference the cell addresses with the values they wish to graph, rather than export the whole sheet into MOII. For that tip, and your past help, I am hoping that our beloved and very good-looking editor will send you a little *je ne sais quoi* as a thank-you (a little crawling always helps!)

Random

You may recall that a couple of months ago I asked for help with Random Access Filing, on behalf of Peter Halliwell Redvers, and I am indebted to everyone who has written in with information. I wish we had room to print all the letters in full but we haven't, so a precis is in order!

Richard Moss, from Stockport, which used to be in Cheshire, but now seems to have disowned the said county, suggests an £8 solution from the Public Domain Software Library (PDSL), which lives at Winscome House, Beacon Road, Crowborough, Sussex TN6 1UL (08926 63298).

They have a disc called KUG10, which contains MBASIC.COM. MBASIC just happens to support random access files, and runs under CP/M. Unfortunately, according to Richard, there is no on-disc manual, but syntax is much the same as other Microsoft type Basics.

From Scarborough, the seaside town that still has not recovered from my going to college there, G.W. Duell writes to remind me that in Computing with the Amstrad CPC, before it became CPC computing, before ACU absorbed it, Joe Pritchard had a two-part article on achieving random access filing via some Basic and a little machine code. The issues in question are the Nov/Dec '87 ones, and G.W. goes on to say that if Peter HR would like copies of the articles, I can pass on his address.

Please, if you are interested, and decide to write to G.W., include at the very least a stamped addressed envelope and a couple of spare stamps – photocopying isn't cheap! The address is: 48 Weaponness Valley Road, Scarborough, North Yorkshire, YO11 2JG.

There we leave the 'ongoing' tray, and move into the 'in' tray with a batch of new problems and requests for advice.

Mouse traps

Way back in September, Alastair Hall wrote seeking advice about buying a mouse. It really feels like months ago. He asks whether I would go for a Genius mouse or the AMX mouse, and adds the caveat that he has under £60 to spend. Well, without wishing to cause offence to anyone, I would plump for the AMX rodent every time, because it seems to be supported by more software than any other kind. And there you have it – short and sweet!

From Israel, Mrs Frieda Gilmour writes with a knotty problem. She has sent me some examples of the kind of input she gets from an Apple Mac, and some pretty high-powered word pro-

cessors and printers, much of which involves some very heavy mathematical symbols (heavy as in they do not appear in any of the standard ASCII tables). She wants to know if there is any way she can coax a similar kind of output from her CPC128 and an DMP2000. Frieda also says she is prepared to buy whatever equipment is necessary to make her CPC compatible with IBM PCs, if that is what it will take.

Well, Frieda, I have ploughed through all of the word processors I have at my disposal, and that includes almost all of the CPC programs available at the moment, as well as most of the well-known programs, and there is really only one that is set up for what you need. That particular one runs on IBM PCs and their compatibles, so is totally unsuitable for use with your CPC.

Also, I am sorry to say that the CPC is not upgradeable to PC compatibility, so the 'necessary equipment' would mean at least a PC compatible. Sorry to be the bearer of such bad tidings, but that is the way the cookie crumbles.

Basic info

While we are in foreign climes, Mrs Stephanie Shaw has written from a BFPO address, seeking some basic info on word processors. She is possessed of a 464 and a DMP1, which she would like to use to help her present her Open University essays nicely, but she has been told that the 464 only has 42k available to the user for programs, and she has some doubts about whether her 2,000 word opi (that is the posh word for opusses) would fit onto the machine.

Stephanie asks whether it would be necessary to expand the memory of the machine, and if it would be advisable to buy a disc drive. She would also like my opinion on which would be the most suitable word processor to get hold of.

Well, to prioritise buying, I would always go for a disc drive first, and memory expansion second, basically because there are so few programs that take advantage of the second bank of 64k RAM that expansion provides; but mainly because the difference in the speed of storage. Let me explain why.

When you consider something like word processing (something I do every day that God sends), it is important that you have a quick and reliable storage medium. I have always had the habit of saving my work every couple of hundred words or so, and when using floppy discs, on whatever machine, I have always made sure that I have got the last three versions safe before I save the next one out. That way, I have got four lots of words: one in memory, and three on disc – albeit at different stages of completeness.

Now, to get that kind of safety net with a tape-based system, you are going to be waiting for some time for the cassette to stop grinding its way round before you can get on with what you want to do. On the other hand (apart from four fingers and a thumb) you have got speedy saving and loading from disc, which means keeping safe backup files is less painful, and



more likely to be done. Believe me, there is nothing worse than sitting at your keyboard for an hour or so, clattering away and entering a thousand well chosen words of timeless prose, only to have the dog/wife/nipper/cleaning lady trip over the power lead and render your machine lifeless before your very eyes. If you have saved your work a minute or so earlier, it is just a minor inconvenience. If you cannot abide waiting ages for the cassette, and so have not bothered, it is heartbreaking – hands up everybody who's learned the hard way!

So, disc drive first. Now to the program itself. Stephanie mentions Tasword 464, Protext, and Brunword, and asks which would be a good one to use. Grr! It does not matter what I say here, I am bound to get storms of protest from lovers of the other two. To be fair, I started with Tasword on the CPC, because I had been using it for so long on the Spectrum, and could not stand WordStar under CP/M. However, I found that the Spell Checker – TAS SPELL – was far too slow for my needs, and also that the program itself was not flexible enough for what I was doing. Even so, it is a damned good word processor, and no one can take that away from it. And it is also very cheap.

I moved onto Protext – on ROM – and have used that ever since, on the CPC, and PC, and the ST, and the Amiga. I know it inside out, and can make it do exactly what I want it to, with very little fuss and bother, and I can print with any given printer with very little trouble. Its spell checker, whilst not fast and a bit of a pain in the disc version, is a joy in the ROM version. That said, the whole suite, including Protext, ProSpell, ProMerge plus, and the necessary ROM Box is not the cheapest set-up on the market.

The mid-ground is held by Brunword. As I mentioned earlier, I have looked at Brunword on a number of occasions, and, if my needs were not as specialised as they are, I would certainly give it consideration as my main WP. As it stands, if it is to be your first word processor, and you have only one printer (like most people), and you do not need to be able to produce ASCII files for electronic transmission at the drop of a hat, but you *do* like very close WYSIWYG, then there is no doubt that it is a very capable program.

Stephanie, that is the best bit of fence-sitting I have ever done. The fact is that it is almost impossible for me to say 'X is the best', because it depends very much on what you want to do with it. In your case, I suspect Brunword and a disc drive will meet your needs, as they are quite straightforward. There is also the advantage that Mike Brunning operates a 'suck it and see' approach. If you try it and do not like it, you can return it for full refund, and try another one. That cannot be a bad deal!

Oh-oh! We have run out of space again. Never mind, Applications Advice will be back again next month with more of your queries and tips, so keep them coming in. The address is at the front of the magazine, or you can contact me via the new Focus Bulletin Board, details of which appear elsewhere in this mag. See you next month. ●

Through the looking glass

Chris Knight drops in on Mirrorsoft to unwrap the secret of its success

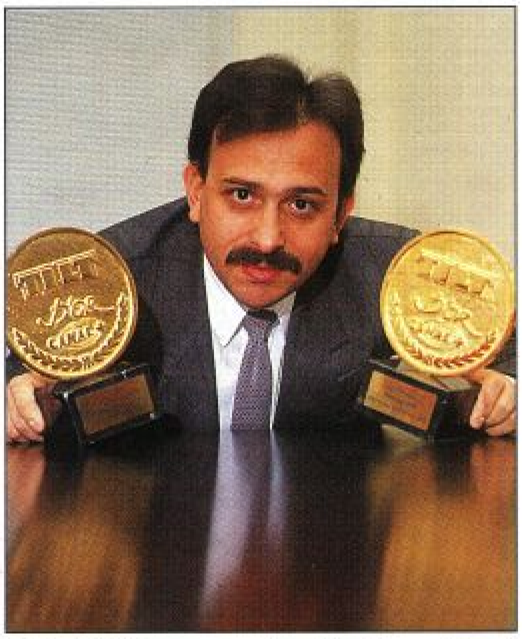
Mirror, mirror on the wall, who has the largest profile of them all? Imageworks? Cinemaware? FTL? PSS? Spectrum Holobyte? Or all of them?

When Mirrorsoft first beamed into existence some five years ago under the wing of Robert Maxwell's burgeoning media empire, its original guise was that of a low-profile software house based upon research into scientific and technical issues for the worlds of education and business. All well and good, but nowadays, under its many pseudonyms, there is a little more to it than that, as MD Peter Bilotta will confirm.

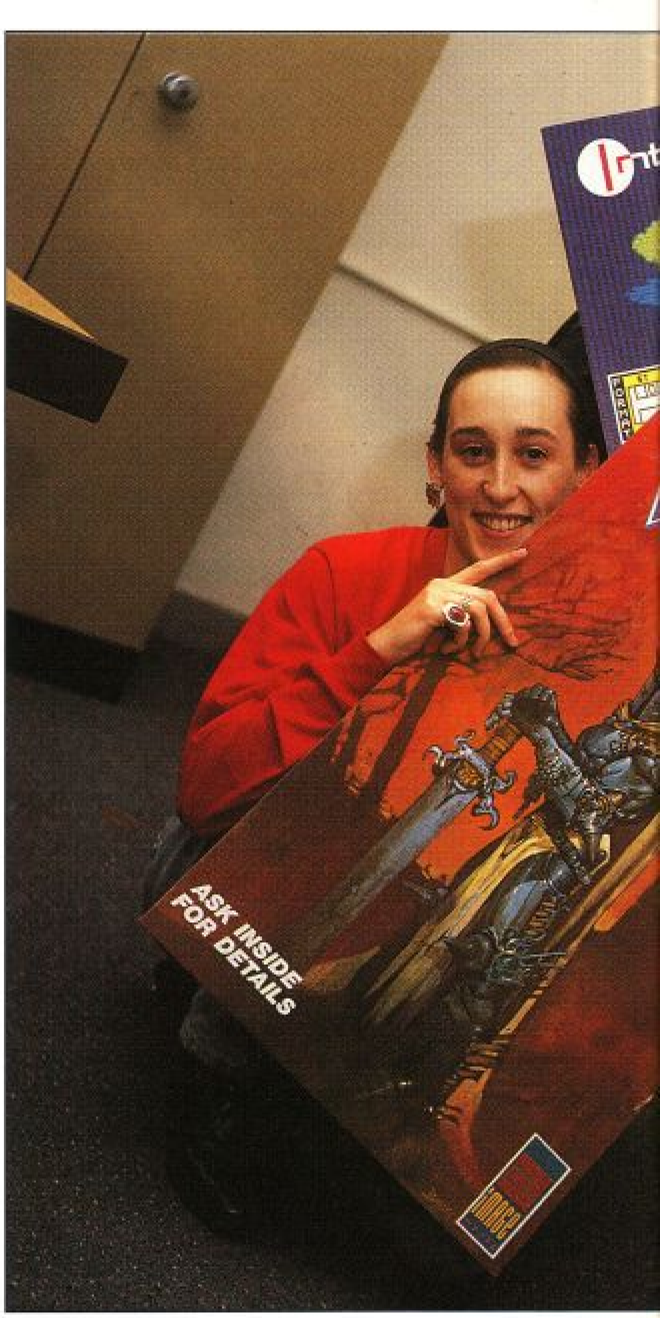
Peter has been at Mirrorsoft's helm for a little over two years, but his pedigree stretches back a lot further, including a five-year stint as finance director at Activision. In those days he did not regard Mirrorsoft as a marketplace competitor. But after a rather successful year in 1988, which saw twenty-five awards for product excellence tucked under its corporate belt, including "Software House of the Year", Mirrorsoft's low profile days are seemingly long gone.

"In the early days, we kept pretty much to ourselves," says Peter, "But we are now firmly on the map and we've got to focus our identity in the marketplace. We have been number one publisher for some weeks now and obviously we are proud, but we can't be complacent. After all, a company is only as good as its last or next product."

According to Peter, part of Mirrorsoft's meteoric rise to stardom can be attributed to two such products,



Peter Bilotta – managing director and medallion man.

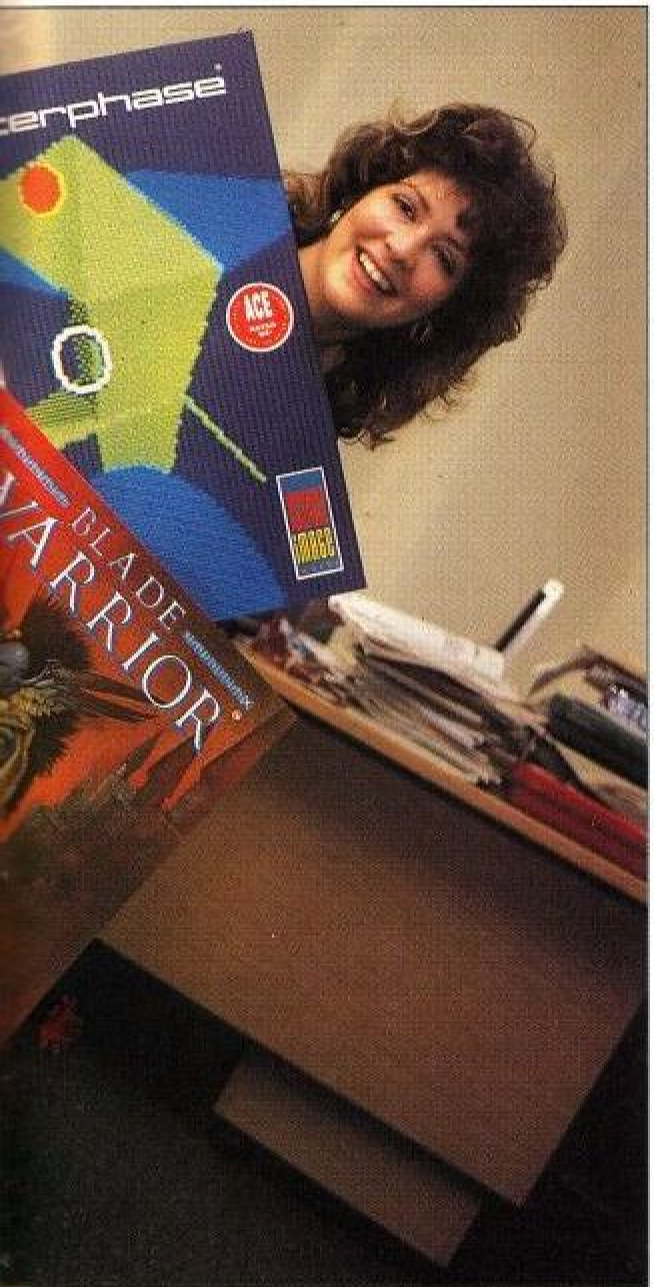


Cathy Campos (top) and Alison Beasly.

and very familiar names they are too." *Defender of the Crown* and *Dungeon Master* must take some sort of top placing historically," he claims. "Our game reviews are in the 80s and 90s for lots of products nowadays, because they are very exploitable. This is extremely important."

This very successful exploitation of original game concepts was demonstrated with the release of *Chaos Strikes Back* – add-on to Dungeon Master. Originally envisaged as merely several add-on levels, the game has developed into a fully fledged sequel, featuring completely new monsters and adversaries and a character portrait editor which enables players to change the appearance of their chosen party. Judging by the success of the original and its growing number of addicts, this 'Son of Dungeon Master' should be in for a warm reception in its varying formats.

But success, as all software houses are aware, naturally breeds imitations. Should a firm feel flattered to see original ideas picked up and played around with by others or frustrated?



Peter Bilotta claims the former. "Obviously, we have experienced this sort of thing and it is quite complementary. There have been some products very similar to *Falcon* and very admirable games they are too. But at the end of the day, they have been and gone while Falcon is still going strong. In fact, it has sold more copies than any other game in Europe on 16 bit."

The secret of success, they say, is in the making, and this is something in which Mirrorsoft firmly believes. "A good piece of home computer software is like a film. It has to be scripted and if it is no good, it is thrown out. It also needs to be storyboarded and the right team for each piece is essential. The two products really are getting more and more akin."

With computer graphics getting more true to life virtually every day, this affinity between software and movies could fast become reality, and raises again the currently fervent debate on game ratings. Does Peter Bilotta believe it makes sense?

"Clearly, with the violence that we see in films and the more realistic developments there are on the screen, it is something that might have to be looked into. I do feel that we have a responsibility as a publisher not to go over the top and we tend in the end to go for something as uncontroversial as possible."

But less of the responsibilities and more of the plans. Just around the corner is 1990: having grown from humble beginnings into the multi-media powerbase Mirrorsoft now is, the question must arise as to where it goes in the next decade?

Across its labels, the company claims to look after dedicated users of all age groups. The Imageworks mandate is to accommodate the needs of the young, sophisticated user; Spectrum Holobyte takes care of some of the best 16-bit crunchers; whilst Cinemaware stands in the forefront of the latest CD-ROM entertainment technology. The list goes on, giving the impression that somehow the '90s are all sewn up.

Amongst releases planned for the New Year are such blockbusters as *Bloodwych* and *Back to the Future* (Parts two and three – to coincide with the film releases). Spectrum Holobyte have apparently achieved the impossible and improved upon Falcon, the EGA IBM version of which is now being used to train our boys in uniform!

And, wait for it, thanks to a £5 million investment agreement with Guinness Publishing and Pergamon Compact Solution, 1990 will be the year of the "Guinness Disc of Records", a multi-media version of the book operating with CD-ROM drives. Anything else?

"We find computer users are very critical and that is very good, we need that, "stresses Peter." There is so much to do in terms of strategising for the future and we are expanding the whole time. There is a multi-media market out there worth many millions and we are aiming to be at the forefront helping to create supply for a demand.

"If we do it right, consoles and computers will be able to live side by side. The possibilities are tremendously exciting." ●



An eager programmer.

BLOCKADES

We have been overwhelmed by requests for a big listing – so here goes, a game that should provide hours of post Christmas entertainment, or hours of agonizing typing at the very least. We'll try for a serious one next month.

BY MARION CLARKE

```
10 REM *************** [EA]
20 REM *             * [95]
30 REM *  Blockades  * [21]
40 REM *     by      * [FC]
50 REM *   Marion    * [3C]
60 REM *   Clarke    * [3C]
70 REM *             * [9A]
80 REM *************** [F1]
90 ' [F9]
100 CALL &BC02:PAPER 0:PEN 1:MODE 1:FOR a=1 TO 2:CLS:LOCATE 16,1:PRINT"BLOCKADES
":LOCATE 16,2:PRINT STRING$(9,CHR$(208)):PRINT:FOR b [46]
=1 TO 4:READ a$:PRINT a$:PRINT:NEXT:LOCATE 15,25:PRINT"Press Space";:WHILE INKEY
(47)<>0:WEND:NEXT:GOSUB 210 [46]
110 DATA "This is a strategy game for two players,the object being to get one of
 your fivecounters home before your opponent." [9A]
120 DATA "At the start of your turn, your dice is thrown and your cursor (*) app
ears in  the centre of the screen." [4C]
130 DATA "Both players use the arrow keys to move,Space to pick up the counter u
nder the  cursor, and Enter to place it. If used  be [3A]
fore Enter, Del will abort a move." [3A]
140 DATA "You may move the cursor almost anywhere,but when you have picked up a
counter,  you must stay on the lines, and will notbe [9C]
 allowed to retrace your steps while  moving it." [9C]
150 DATA "You may pass your opponent's counters.  If you place yours on one, you
 send it  back to the start." [C2]
160 DATA "The black squares are blockades, and maynot be passed. If you place yo
ur counteron one, you can then move it (to a placewh [0D]
ere it will hinder your opponent!)" [0D]
170 DATA "You may only enter the home box on a    complete move."," " [6C]
180 WHILE w=0:GOSUB 310:WHILE (d1<d OR t=1) AND w=0:RESTORE 190:FOR m=1 TO 9:REA
D n:IF INKEY(n)=0 THEN ON m GOSUB 390,390,390,390,43 [4A]
0,450,480,630,650 ELSE NEXT [4A]
190 DATA 0,1,2,8,47,6,79,37,60 [AA]
200 WEND:WEND:GOSUB 500:IF i=0 THEN CALL &BC02:PAPER 0:PEN 1:MODE 1:END ELSE GOS
UB 240:w=0:GOTO 180 [C9]
210 ENV 1,1,-15,8,1,15,2,1,-15,8,1,15,2,1,-15,8:ENT 1,1,20,10,1,-20,10:ENT 2,1,-
20,10,1,20,10 [E7]
220 MODE 1:INK 0,14:INK 1,6:INK 2,22:INK 3,0:PAPER 0:PEN 3:CLS:BORDER 14:WINDOW
#1,2,11,10,13:PAPER #1,0:PEN #1,3:WINDOW #2,31,40,10 [DD]
,13:PAPER #2,0:PEN #2,3 [DD]
230 SYMBOL AFTER 252:SYMBOL 252,255,128,164,165,189,165,164,0:SYMBOL 253,255,0,2
00,45,42,40,200,0:SYMBOL 254,255,1,189,161,185,161,1 [FC]
89,0:SYMBOL 255,255,129,129,129,129,129,129,255:DIM z(17,13) [FC]
240 CLS:RESTORE 250:FOR v=1 TO 13:FOR u=1 TO 17:READ z:z(u,v)=z:NEXT:NEXT:LOCATE
 9,1:PRINT"K = Keys":LOCATE 26,1:PRINT"S = Stop" [ED]
250 DATA 6,6,75,61,75,121,6,6,7,6,6,6,6,116,112,6,6,0,0,0,0,0,0,0,3,0,0,0,0,0,
0,0,0,0,6,6,6,66,76,79,67,75,65,68,69,83,6,6,6,0,0,0 [A5]
,0,0,0,0,0,0,3,0,0,0,0,0,0,0,6,6,6,6,6,6,6,3,6,6,6,6,6,6,6,8,8,6,6,0,0,0,0
,3,0,0,0,0,6,6,8,8 [A5]
260 DATA 8,8,6,6,0,6,6,243,6,242,6,6,0,6,6,8,8,6,6,0,0,0,0,3,0,0,0,3,0,0,0,0,6,6
,6,6,0,6,6,6,0,6,6,6,0,6,6,6,0,6,6,3,0,0,0,3,0,0,0,3 [58]
,0,0,0,3,0,0,0,3,0,6,6,6,0,6,6,6,0,6,6,6,0,6,6,6,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
,0,0,6,6,4,4,4,4,1,6,6,6,2,5,5,5,5,6,6 [58]
270 LOCATE 20,1:PRINT CHR$(252);CHR$(253);CHR$(254);:PLOT 304,384,3:DRAWR 0,-2:D
RAWR 46,0:DRAWR 0,2:FOR v=3 TO 25 STEP 2:FOR u=5 TO  [DF]
```

```
37 STEP 2:GOSUB 560:NEXT:NEXT [DF]
280 PAPER 0:FOR v=3 TO 23 STEP 4:FOR u=6 TO 36 STEP 2:IF z((u-3)\2,(v+1)\2)>3 TH
EN 300 ELSE IF z((u-3)\2,(v+1)\2+1)<4 THEN LOCATE u- [9C]
1,v+1:PRINT CHR$(149);:IF v<23 THEN LOCATE u-1,v+3:PRINT CHR$(149); [9C]
290 IF z((u-3)\2+1,(v+1)\2)<4 THEN LOCATE u,v:PRINT CHR$(154);:IF z((u-3)\2+1,(v
1)\2+1)<4 THEN LOCATE u+1,v+1:PRINT CHR$(149);:IF v [FF]
23 THEN LOCATE u+1,v+3:PRINT CHR$(149); [FF]
00 NEXT:NEXT:LOCATE 21,2:PRINT CHR$(149);:LOCATE 18,13:PRINT CHR$(154);:LOCATE
1,13:PRINT CHR$(154);:p=1:LOCATE 21,13:PEN 1:PRINT" [99]
";:ct(1)=5:ct(2)=5:x=21:y=13:PLOT 312,382:DRAWR 32,0:xt=0:yt=0:xp=0;yp=0:t=0:RE
URN [99]
10 d1=0:CLS #1:CLS #2:PLOT 480*p-416,194,3:DRAWR 0,48:DRAWR 48,0:DRAWR 0,-48:DR
WR -48,0:MOVER 4,4:FILL p:FOR a=1 TO 3:SOUND 1,120, [33]
0,15,1,1:SOUND 1,120,20,15,1,2:NEXT:WHILE SQ(1)>4:WEND:d=INT(RND*6)+1:ON d GOTO
320,330,340,350,360,370 [33]
20 PLOT 480*p-394,216:GOTO 380 [0C]
30 FOR a=0 TO 1:PLOT 480*p-404+a*20,228-a*24:GOSUB 380:NEXT:RETURN [1F]
40 FOR a=0 TO 2:PLOT 480*p-404+a*10,228-a*12:GOSUB 380:NEXT:RETURN [88]
50 FOR a=0 TO 1:FOR b=0 TO 1:PLOT 480*p-404+a*20,228-b*24:GOSUB 380:NEXT:NEXT:R
TURN [D4]
60 FOR a=0 TO 1:FOR b=0 TO 1:PLOT 480*p-404+a*20,228-b*24:GOSUB 380:NEXT:NEXT:P
OT 480*p-394,216:GOTO 380 [28]
70 FOR a=0 TO 1:FOR b=0 TO 2:PLOT 480*p-404+a*20,228-b*12:GOSUB 380:NEXT:NEXT:R
TURN [48]
80 FOR z=1 TO 3:DRAWR 4,0,3:MOVER -4,2:NEXT:RETURN [C9]
90 IF d1=d THEN SOUND 1,600,10:RETURN ELSE z=z((x-3)\2,(y+1)\2):IF t=1 AND z=3
HEN SOUND 1,600,10:RETURN ELSE u=x:v=y:IF n=8 AND x]
5 THEN x=x-2 ELSE IF n=1 AND x<37 THEN x=x+2 ELSE IF n=0 AND y>1 THEN y=y-2 ELS
 IF n=2 AND y<25 THEN y=y+2 [A0]
00 WHILE INKEY(n)=0:WEND:IF x=u AND y=v THEN RETURN ELSE z=z((x-3)\2,(y+1)\2):I
 t=1 AND z=7 AND d=d1+1 THEN w=1:RETURN ELSE IF (t= [D9] ]D9]
 AND z=6) OR z=7 OR z=8 OR z=p+3 OR (x=xp AND y=yp) THEN SOUND 1,600,10:x=u:y=v
RETURN [D9]
10 GOSUB 560:IF z=p THEN PEN 3 ELSE PEN p [51]
20 LOCATE x,y:PRINT CHR$(22)+CHR$(1);"*";CHR$(22)+CHR$(0);:SOUND 1,250,5:IF t=1
THEN d1=d1+1:xp=u:yp=v:RETURN ELSE RETURN [1C]
30 WHILE INKEY(47)=0:WEND:z=z((x-3)\2,(y+1)\2):IF z<>p OR t=1 THEN SOUND 1,400,
0:RETURN ELSE t=1:FOR a=100 TO 50 STEP -1:SOUND 1,a, [63]
1:NEXT:xt=x:yt=y:d1=0:IF y=25 THEN GOSUB 540:RETURN ELSE z((x-3)\2,(y+1)\2)=0:R
TURN [63]
40 IF y=25 THEN GOSUB 540:RETURN ELSE z((x-3)\2,(y+1)\2)=0:RETURN [EC]
50 WHILE INKEY(6)=0:WEND:z=z((x-3)\2,(y+1)\2):IF t=0 OR z=p OR d1<>d OR y=25 TH
N SOUND 1,400,10:RETURN ELSE z((x-3)\2,(y+1)\2)=p:t [5D]
0:FOR a=50 TO 100:SOUND 1,a,1:NEXT:LOCATE x,y:PAPER p:PEN 3:PRINT CHR$(255);:IF
z=3 THEN GOSUB 570 [5D]
60 p=3-p:IF z=p THEN WHILE SQ(1)>4:WEND:SOUND 1,150,10:GOSUB 550 [6A]
70 LOCATE 21,13:PAPER 0:PEN p:PRINT"*":x=21:y=13:xp=0:yp=0:RETURN [2B]
80 WHILE INKEY(79)=0:WEND:IF t=0 THEN SOUND 1,600,10:RETURN ELSE u=x:v=y:GOSUB
60:LOCATE xt,yt:PAPER p:PRINT CHR$(255);:SOUND 1,15 [27]
,10:d1=0:t=0 [27]
90 LOCATE 21,13:PAPER 0:PEN p:PRINT"*":x=21:y=13:z((xt-3)\2,(yt+1)\2)=p:IF yt=2
 THEN GOSUB 550:RETURN ELSE RETURN [06]
00 IF s=1 THEN s=0:PAPER 0:CLS:GOTO 520 ELSE FOR a=250 TO 50 STEP -1:SOUND 1,a,
:NEXT:PAPER 0:PEN p:CLS:FOR a=1 TO 2:LOCATE 11,8+a: [4E]
RINT STRING$(20,"*"):NEXT:LOCATE 11,11:PRINT"**";SPACE$(16);"**":LOCATE 11,12:P
INT "**  THE WINNER!!  **" [4E]
10 LOCATE 11,13:PRINT"**";SPACE$(16);"**":FOR a=1 TO 2:LOCATE 11,13+a:PRINT STR
NG$(20,"*"):NEXT [F8]
20 PEN 3:LOCATE 15,24:PRINT"Another Game?" [57]
30 CLEAR INPUT:a$="":WHILE a$="":a$=UPPER$(INKEY$):WEND:IF a$="N" THEN i=0:RETU
N ELSE IF a$="Y" THEN i=1:RETURN ELSE 530 [99]
40 u=(p*2-3)*(ct(p)*2+2)+21:ct(p)=ct(p)-1:z((u-3)\2,13)=6:IF ct(p)>0 THEN LOCAT
 u,25:PAPER 0:PRINT" ";:RETURN ELSE RETURN [23]
50 ct(p)=ct(p)+1:u=(p*2-3)*(ct(p)*2+2)+21:z((u-3)\2,13)=p:LOCATE u,25:PAPER p:P
N 3:PRINT CHR$(255);:RETURN [34]
```

```
560 PEN 3:z1=z((u-3)\2,(v+1)\2):LOCATE u,v:IF z1>7 THEN PAPER 0:PRINT CHR$(z1);:
RETURN ELSE IF z1>5 THEN PAPER 0:PRINT" ";:RETURN EL [15]
SE IF z1>3 THEN PAPER z1-3:PRINT CHR$(255);:RETURN ELSE PAPER z1:PRINT CHR$(255)
;:RETURN [15]
570 CLS #p:LOCATE #p,3,1:PRINT #p,"Move":LOCATE #p,1,3:PRINT #p,"Blockade":LOCAT
E 21,13:PAPER 3:PEN p:PRINT"*";:x=21:y=13:b=0 [CC]
580 WHILE b=0:FOR n=0 TO 2:IF INKEY(n)=0 THEN GOSUB 600 ELSE NEXT:IF INKEY(8)=0
THEN n=8:GOSUB 600 ELSE IF INKEY(6)=0 THEN GOSUB 620 [7B]
590 WEND:PAPER 0:RETURN [50]
600 u=x:v=y:IF n=8 AND x>5 THEN x=x-2 ELSE IF n=1 AND x<37 THEN x=x+2 ELSE IF n=
0 AND y>1 THEN y=y-2 ELSE IF n=2 AND y<25 THEN y=y+2 [54]
610 WHILE INKEY(n)=0:WEND:GOSUB 560:LOCATE x,y:PAPER 3:PEN p:PRINT"*";:SOUND 1,3
50,5:RETURN [6F]
620 WHILE INKEY(6)=0:WEND:z=z((x-3)\2,(y+1)\2):IF z<>0 THEN SOUND 1,500,10:RETUR
N ELSE z((x-3)\2,(y+1)\2)=3:FOR a=100 TO 150:SOUND 1 [70]
,a,1:NEXT:LOCATE x,y:PAPER 3:PEN 3:PRINT CHR$(255);:b=1:RETURN [70]
630 RESTORE 640:FOR a=1 TO 4:READ a$:LOCATE #3-p,1,a:PRINT #3-p,a$;:NEXT:LOCATE,
#3-p,7,1:FOR a=1 TO 4:PRINT #3-p,CHR$(239+a);:NEXT:R [E3]
ETURN [E3]
640 DATA "move=","space=take","enter=drop","del=abort" [5C]
650 CLS #3-p:LOCATE #3-p,3,2:PRINT #3-p,"Are you";:LOCATE #3-p,4,3:PRINT #3-p,"s
ure?"; [21]
660 CLEAR INPUT:a$="":WHILE a$="":a$=UPPER$(INKEY$):WEND:IF a$="N" THEN CLS #3-p
:RETURN ELSE IF a$="Y" THEN w=1:s=1:RETURN ELSE 660 [08]
```

PROOF CODES

From time to time we like to providé you with your very own set of proofcodes to enable you to avoid frustration from typing errors in listings and 10-Liners. So, here goes again. Let it never be said that we do not respond to your many pleas for help. If any of you have written programs which you would like to be considered for publication, send us a copy.

```
100 ' ACU Proofreader v1.5 [A1]
110 ' By Aimo Niemi [A3]
120 ' CPC 464, 664, 6128 [A5]
130 ' [A7]
140 MEMORY HIMEM-129 [D6]
150 addr=HIMEM+1:rst=48 [AC]
160 ad=INT(addr/256):dr=addr-256*ad [80]
170 FOR bit=0 TO 15 [B6]
180 READ a$,check:sum=bit [AD]
190 FOR k=1 TO 15 STEP 2 [06]
200 b=VAL("&"+MID$(a$,k,2)) [ED]
210 POKE addr,b [59]
220 addr=addr+1 [1D]
230 sum=(sum+k*b)MOD &FF [5E]
240 NEXT [36]
250 PRINT "Line";460+10*bit; [F3]
260 IF sum<>check THEN PRINT"Checksum error."
:STOP ELSE PRINT"Ok." [B3]
270 NEXT [3C]
280 ' [B2]
290 pr=&BD2B 'printer address [23]
300 sc=&BB5A 'screen address [C8]
310 REMsc=pr 'Add this line when using LIST#8
. Observe, however, that the proofcodes may b
e lost if the printer buffer happens to be fu
ll. [75]
320 ' [A7]
330 FOR i=0 TO 2 [18]
340 POKE rst+i,PEEK(sc+i) [C7]
350 NEXT [39]
360 POKE sc,&C3 [D2]
370 POKE sc+1,dr [74]
380 POKE sc+2,ad [76]
390 IF PEEK(6)=&80 THEN POKE HIMEM+10,&A4 [01]
400 ' [A4]
410 POKE HIMEM+7,&20 [0E]
420 PRINT "Proofcodes to "; [9B]
430 IF sc=pr THEN PRINT "printer";ELSE PRINT
"screen "; [F7]
440 PRINT "are on.":END [9E]
450 ' [AE]
460 DATA e5f5c5d5fe0d203a,15 [C5]
470 DATA 218aac5faf47577e,210 [D2]
480 DATA fe30382efe3a302a,80 [07]
490 DATA 7ef600202ebb2028,243 [75]
500 DATA 3e20f73e5bf77a07,173 [FB]
510 DATA 070707e60ff630fe,28 [31]
520 DATA 3a3802c607f77a1c,39 [49]
530 DATA cb4320ef3e5df73e,61 [E3]
540 DATA 12f7d1c1f1e1f7c9,8 [CC]
550 DATA 2b3e27bb2004fe20,246 [1E]
560 DATA 282804fe27f52007,180 [E4]
570 DATA 3e20bb200daf5ff6,135 [0C]
580 DATA 20f5afbb2003f1af,117 [E0]
590 DATA f5f15f0e007a8357,39 [04]
600 DATA 0c79b820f8f12002,232 [CD]
610 DATA 1e0023189b000000,253 [51]
620 ' [AA]
630 ' poke himem+7,&20 = on [AC]
640 ' poke himem+7,&18 = off [AE]
```

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All systems go

Gordon Bates kicks off the nineties with more comms chat.

Before we delve into the Comms world for another month, let me be the first to wish you all a very happy New Year, and a prosperous one too! I sincerely hope that the red-coated bearded one managed to smuggle the odd modem or two into a few Xmas stockings whilst he was about his annual jaunt, and that a few of you will be contacting me via a BBS or two. Whilst we are on the subject of BBS systems, I have Big News! By the time you read this, ACU (together with the other Focus magazines) will have its very own Bulletin Board System up and running and waiting for your call.

It can be reached on 01-828 1577, set your software to 8N1 (8 data bits, No parity, 1 stop bit). Speeds are 300/300, 1200/75, 1200/1200, 2400/2400, and maybe 9600 baud Courier HST standard. The system is running at present using the Eazilink host mode on an IBM PC compatible, but may well be switching to the Searchlight BBS system in the very near future (if it has not done so already).

The two sysops are David Dorn – our Agony Uncle – and John Taylor. David has a lot of experience in Comms, as he is the editor of PC Base, and the Amster's Cage, both of which appear weekly on Micronet (but then you already know that). If I am to be honest, I am a little bit biased about his abilities, because he is my brother! Yes, I know, Bates is not the same as Dorn, but one of us has changed his name – you will have to guess which one, though!

Enough of this. Back to Comms. So far we have looked in very general terms at various different aspects of communicating over the phone lines using a modem, but we have not gone into what actually happens inside the box in any great detail. And we do not really need to. What is more important is understanding your software, because that is what comes between you and the technical bits.

One area of Comms software that tends to confuse a great many people is file transfer and its associated protocols. When you access any of the systems that we have already discussed – like Micronet and private BBS systems – one of the major attractions will be the opportunity to get hordes of software free. Well, when I say free, I mean for the cost of a phone call. The process is called Downloading, or transferring files from one computer to another.

The trouble is that telephone lines are noisy objects, as you will know from having ordinary phone conversations. You will have heard the 'egg frying' hiss that often accompanies a call, and the various pops and cracks and whistles that manage every so often to squeeze themselves onto the line.

In Comms terms, these are referred to as 'line noise', and, although they do not make for too many problems in a speech call, they can wreak havoc if you are talking modem to modem. The reasoning behind this is that when modems talk to each other, they make whistles that sound very much like a hissy screech to the human ear. What they are actually doing is converting digital computer signals into an audible set of tones, and these tones are alternated between at a very high rate.

Each end expects to get the right tones, in the right order, and the right number of them. If a stray crackle or pop gets in the way, the receiving modem will accept it as being a legitimate sound, and will try to make sense of it. In this case, you may get a character appearing on your screen that you have never seen before, and

which does not make any sense at all. If that happens while you are trying to download (or upload, which is sending a file to the other computer – simple, or what?) a file, especially a machine code or binary file, when you try to run it, it will crash, because the information is not as it should be.

Now, if you have been downloading a text file, it is not too serious, because you will have at least some idea of what the text ought to look like, and you will be able to reconstruct it. As we have seen, though, program files need a safety net.

This is where File Transfer Protocols come in. When you go to download a file from, say, the Focus BBS (and I am sure you will) you will be offered a number of different methods of doing so. Although some of the methods are more efficient than others, they all basically do the same sort of thing. What happens is more or less this.

The sending computer looks at the file it is going to send, and picks chunks of it up at a time. It counts how many bytes it has got, and adds up the value of each byte. Before it sends this chunk, it tags a byte or two to the front of it, which tells the receiving computer how many bytes to expect, and another byte or two to the end of it to tell it what the total value of the bytes is. The chunk, with its new header and footer, is called a packet, and the footer (last couple of bytes) is known as a checksum.

The receiving end reads the first couple of bytes in the packet, and so knows how long the packet is, and where the checksum bytes are. It gaily reads the whole thing in, and then does its own calculation, chopping the header and checksum off. If its answer agrees with that reached by the sending computer (ie the two checksums agree) then it sends a small packet to the sending computer. This basically says 'That one was fine, let me have the next lot, please.'

If the two checksums do not agree, then it sends a message along the lines of 'Dummy, you've got it wrong, now send it to me again, and this time get it right!' instead, which is exactly what happens.

Now, that is a very simple explanation of what goes on. The different file transfer protocols handle the task in different ways. Some, like *Zmodem*, vary the size of the packets depending on how many errors it finds: the more errors there are, the smaller the packets become, and likewise, if no errors are encountered, the packets grow bigger. That is to make sure that the least possible time is spent moving chunks of data over the phone lines.

CPC owners, though, are likely to find that they have access to only a few of the many protocols that are round at the moment. These will include *Xmodem* (in two variants – CRC and Checksum), *1K Xmodem* (sometimes incorrectly called Ymodem), *Modem 7* (which works on 7-bit systems like Prestel and Telecom Gold when they get round to implementing it) and *Kermit*, which is named after a certain famous frog!

The most commonly found of these are Xmodem and its variants, and Kermit, with Kermit being the faster of the two. To all intents and purposes, though, Xmodem will suffice for most people on the CPC, and it is contained in MEX, a PD Comms program, as well as almost all of the commercial scrolling terminal software. For those of you who would like to play with MEX, there will be a number of copies on the Focus BBS, in the CPC download area, some of which are set up for different serial interfaces and modems.

We will leave it there for this month, as there is quite a bit to take in at one sitting. The best way to learn about file transfers is to have a go at it; it really is quite simple and painless, and can be a great way to get your hands on cheap software. One pointer, though. BBS sysops spend a lot of time gathering software together for downloading, and appreciate your help.

As a rule of thumb, if you upload one program for every five you download, you will make the sysop a very happy man indeed, and will be very welcome to return to his system. If you only trough files down, and never upload a file, or contribute to the messages on the system, you may find your privileges being cut off! And that can be as painful as it sounds!

I will be back next month but, in the meanwhile, why not log onto the Focus Board, and drop me a line? You can try some file transfers while you are there!

P.S. Here's a few Bulletin Board Systems for you to try your luck with, and don't forget those etequette rules I mentioned last month.

Take your pick from the bunch following this format:

A) Board name & location;Area;Telephone
B) Sysop;BB software;Speeds supported
C) Weekday hours;Weekend hours:Other information
D) Format/Viewdata;Netmail

1.
A) Alan Solomon's – Amersham-;SE;0494 724946
B) Alan Solomon:FIDO:v21/22/22bis/23
C) 24 Hrs;24 Hrs;PC oriented. Famous problem clinic
D) N–8–1;254/29

2.
A) Alternative Reality – BigH;SE;0959 76695
B) Robert Walker;HBBS;v21/23/23v
C) 24 Hrs;24 Hrs;BBC ESP Music/CBM/Amstrad
D) N–8–1;none

3.
A) Amstrad Support – Harlow;SE; 0279 454557
B) Brian Chappell;OPUS;v21/22/22 bis/23
C) 24 Hrs;24 Hrs;Official Amstrad Support Board
D) N–8–1;none

4.
A) Amtech Support – Bournemouth-;SE;0202 294716
B) Yorick Phoenix;TBBS;v21/2/22bis/HST
C) 24 Hrs;24 Hrs:
D) N–8–1;253/206

5.
A) BBS09 QBBS – Emsworth;SE;0243 379374
B) Jon Dunster;QuickBBS;v21/22/22bis/HST
C) 24 Hrs;24 Hrs;PC/OS9/ST/Amstrad
D) N–8–1;251/11

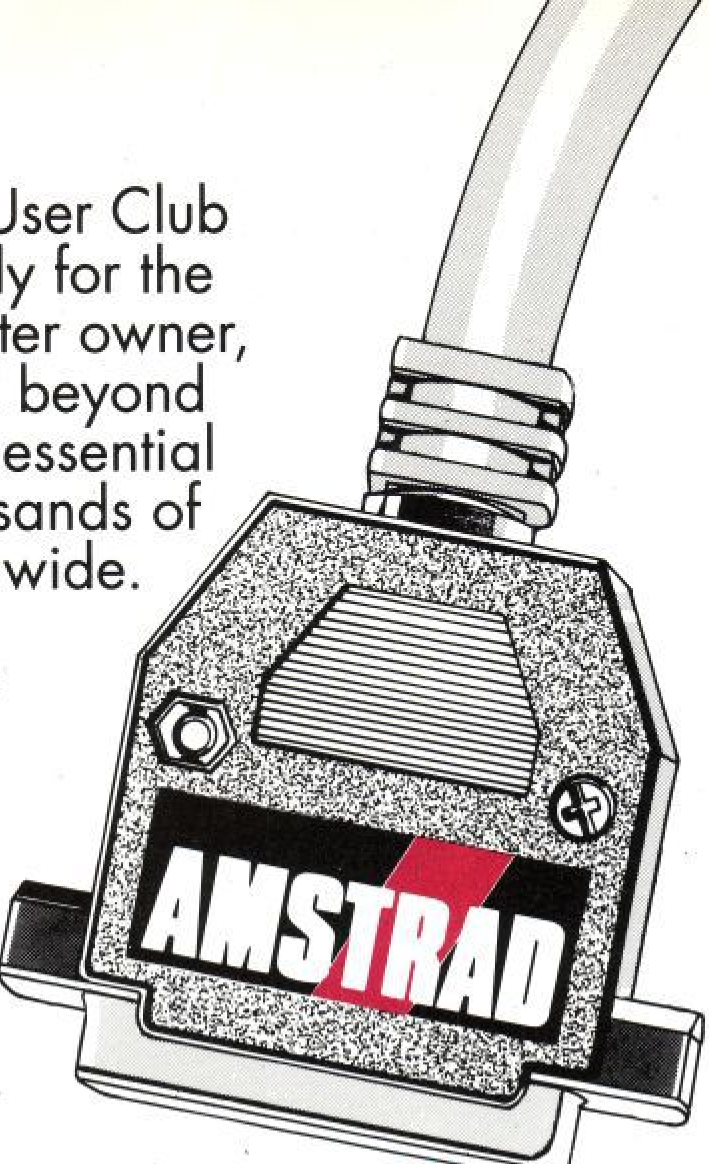
6.
A) Breakthrough – Liverpool;NW;051-734 5817
B) Jim Hamilton;TBBS;v21/23
C) 24 Hrs;24 Hrs;Photography SIG
D) N–8–1;NONE

7.
A) Buzbys Hotline – Glasgow;SC;041–762 2000
B) Raymond Orr;GT–Power;v21/22/22bis/HST
C) 24 Hrs;24 Hrs;Telecomms/Satellite Comms
D) N–8–1;GT50/12

8.
A) Cats Board – Maidenhead;SE:0628 824852
B) Mike Corby:Quickbbs;v21/22/22 bis/hst
C) 24 Hrs;24 Hrs;PC/ST/BBC/MAC/CPM/Amstrad
D) N–8–1;253/27

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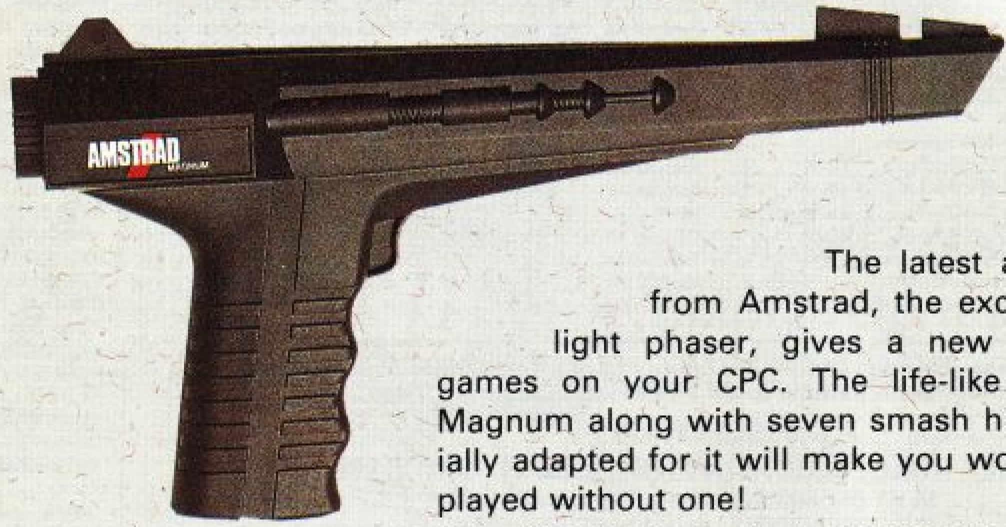
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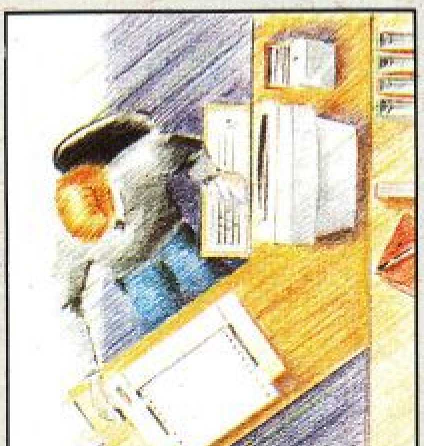
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(see p22)

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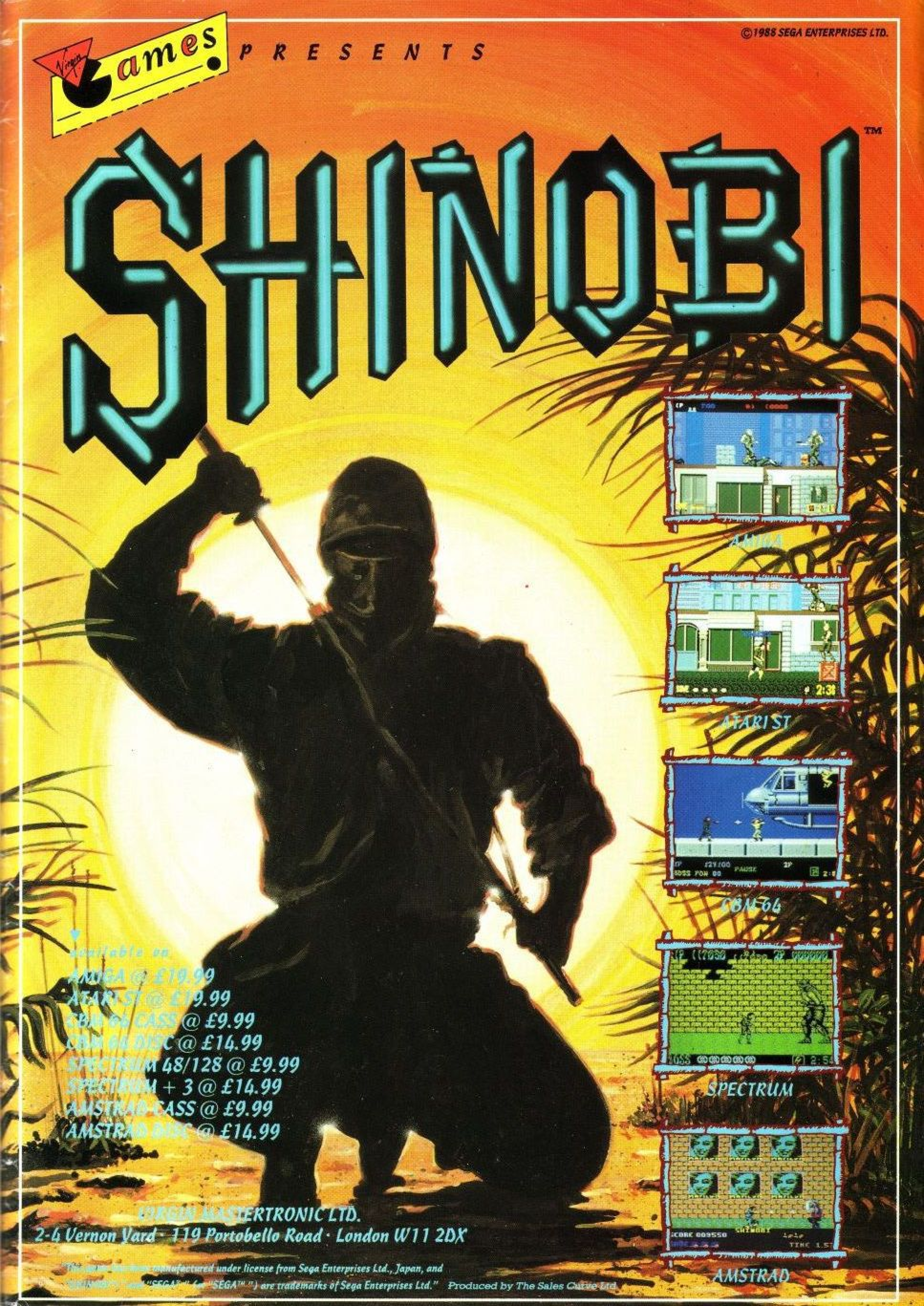
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